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PAPER TRADE JOURNAL

Vol. LXXXIII, No. 1 JULY 1, 1926 Per annum, $4.00 Per copy, 10 cents

Upsetting the Dope

"And they asked me how I did it,
And I gave 'em the Scripture text,
'You keep your light so shining
A little in front o' the next!'
"They copied all they could follow,
But they couldn't copy my mind,
And I left 'em sweating and stealing
A year and a half behind."

—Rudyard Kipling.

Some four years ago when the "Beloit" Removable feature was first announced, skeptics said, "It can't be done; it's too revolutionary."

Today a score of paper mills from coast to coast are proving that it CAN be done, proving it daily in the operation of their NEW BELOIT FOURDRINIER, and proving it by actual cost sheets and records.

Improvements MUST take place even in the old established ideas of papermaking, to keep pace with the demands of modern times. Keeping up with industry's remarkable advance is the task to which our work is dedicated.

Write for Bulletin No. 9 for further facts.

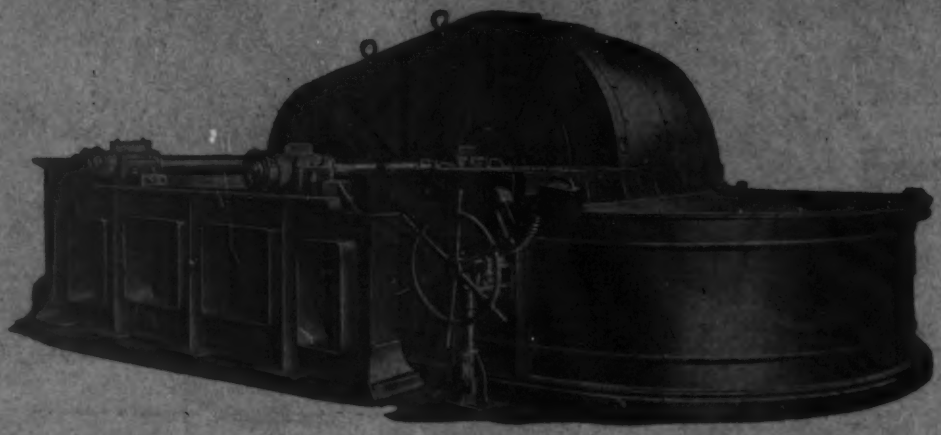
1000 Feet per Minute

"We are running steadily and making high grade paper at one thousand feet per minute. We are proud of our "Beloit" machine."

The NEW BELOIT FOURDRINIER

BELOIT IRON WORKS — Beloit, Wisconsin, U. S. A.

Some Interesting Facts Concerning the Noble & Wood Pulping Engine



The following are a few of the results which have been determined by actual test:

Domestic Kraft pulp laps, 45% dry, fed into 1200 lb. pulper through chute from overhead, treated for beater and dumped within ten minutes. On thoroughly dry foreign Kraft, total time elapsed was 21 minutes.

On straight wood pulp furnish, 80% groundwood, 20% sulphite, a 1200 lb. engine thoroughly pulped the stock, ready for jordans, in 20 to 30 minutes.

Many other equally good records are available upon request.

Our booklet "CUTTING PRODUCTION COSTS WITH THE PAPER PULPING ENGINE" carries a full history of the development of the pulper. Write for a copy.

THE NOBLE & WOOD MACHINE CO., Hoosick Falls, N. Y.

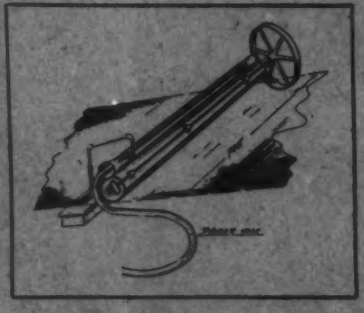
The LANSING Felt Washer

PATENTS PENDING

In use in many of the largest Tissue, Board and Insulating Paper Mills.

One user says:

We have had an increase of 66% in life of the felts, a decrease of 67% in running time lost on account of wet felts and 4% increase in total paper produced.



Another user says:

We are pleased to report that we have one of these felt washers on top felt and it is giving excellent results. We are now corresponding with Mr. Lansing in regard to additional washers.

This is one of the greatest inventions for the benefit of paper manufacturers.

It extends the life of the felt from 25 to 100%. It costs practically nothing to run as it is attached to the journal of any felt roll on machine.

One mill has installed 4 and another 8 machines after thorough trial.

We can refer you to all mills where our felt washer is installed.

GILBERT J. SCOFIELD CO., Inc.

683 Broadway **Albany, New York**

Entered as second class matter August 13, 1925, at the Post Office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. ESTABLISHED 1872 FIFTY-FIFTH YEAR Published every Thursday by the Lockwood Trade Journal Co., at 34 N. Crystal St., E. Stroudsburg, Pa. EXECUTIVE AND EDITORIAL OFFICES: 10 EAST 39th STREET, NEW YORK CITY. CHICAGO: 123 West Madison St., Chicago, Ill.

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BUFFALO BLACK NBRP

NATIONAL
BUFFALO BLACK NBP

POSSESS great covering power and yield blue shades of medium brightness on all pulps. These products will be found very economical in use.

National Aniline & Chemical Co., Inc.
40 Rector St., New York, N.Y.

BOSTON PHILADELPHIA SAN FRANCISCO
PROVIDENCE CHICAGO MONTREAL
HARTFORD CHARLOTTE TORONTO

NATIONAL DYES

PAPER TRADE JOURNAL

ESTABLISHED 1872

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

FIFTY-FIFTH YEAR

Published Every Thursday by the

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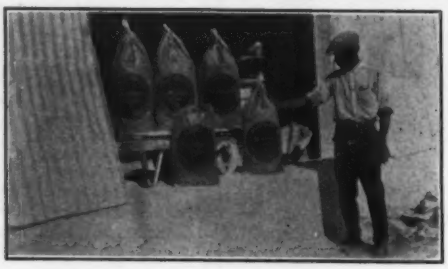
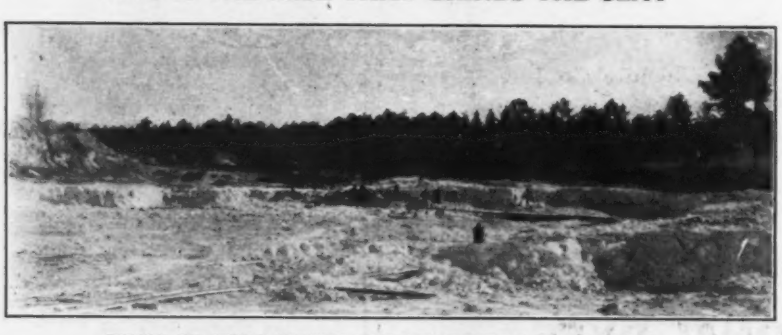
MCNAMEE SUPERFINE CLAY



THIS IS THE CLAY

THIS IS THE MILL THAT GRINDS THE CLAY



THIS IS THE MINE THAT FEEDS THE MILL

Packed like a food product from the pulverizers into 50 lb. paper bags. Absolutely clean.

We can get shipments to your mill TEN DAYS after we receive the order.

R. T. VANDERBILT CO., INC.,

50 East 42nd Street

NEW YORK

ESTABLISHED IN 1872

PAPER TRADE JOURNAL

With Which Is Combined

PAPER

Vol. LXXXIII, No. 1 — Thursday, July 1, 1926

The Magazine of the Paper Industry

Pulp and Paper Research Laboratories for Canada

Canadian Pulp and Paper Association to Erect Building for Scientific and Technical Research on Site of Present Forest Products Laboratories in Montreal—Building to House Forestry Branch of Department of Interior, Industrial and Cellulose Chemistry Department of McGill University, and the Association

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., June 28, 1926.—The Canadian Pulp and Paper Association, at a meeting in Montreal on Friday last, decided to erect laboratories for scientific and technical research relating to pulp and paper. This decision, which is regarded as of immense importance to the industry in Canada, is the culmination of co-operative effort between the association, the Dominion government, and McGill University.

The new building, which will be of the most modern character, will be erected on the sight of the present Forest Products Laboratories in Montreal, abutting on the campus of McGill University and fronting on University Street. This building will form the executive offices of the Canadian Pulp and Paper Association, and of the Division of Pulp and Paper of the Forest Products Laboratories. There will be housed in it, as a separate unit, the Department of Industrial and cellulose Chemistry of the McGill University, in which fundamental research in cellulose chemistry is to be carried out under the direction of Professor Harold Hibbert, holder of the Chair of Industrial and Cellulose Chemistry at McGill University.

The Pulp and Paper Association has formed a corporation which will donate the sum of $350,000 for the erection and endowment of the building. Of this $250,000 is to be applied to the construction, and $100,000 to an endowment fund to provide permanently for the Association's share in the care and maintenance of the building. To meet the financial requirements arising therefrom, a bond issue covering the amount will be issued and each member of the Association will subscribe at par for an amount of the bond issue proportionate to the member's present assessment.

McGill University, on its part, has agreed to lease to the Association for a term of 40 years, at the nominal rental of one dollar a year, the ground upon which the laboratories will be erected. The building itself will revert to the University at the expiration of that period or upon the redemption of the bonds.

The cost of upkeep and maintenance of the building will be borne in equal proportions by the three parties who will share its occupancy—the University, the Forestry Branch of the Department of the Interior, and the association. Provision is to be made for the creation of a board of trustees, three to be nominated by the association, in whom will be vested control of building and of the work to carried on therein.

The building proper, facing University street will be about 160 feet long and 55 feet deep. Above the basement level will be three floors. The first will be devoted entirely to the executive offices of the Canadian Pulp and Paper Association, of the Division of Pulp and Paper of the Forests Products Laboratories, while special provision is to be made for the Department of Industrial and Cellulose Chemistry of McGill University. On the upper floors will be the library and the various research laboratories of these organizations. Reasonable provision has been made for expansion both in research laboratories and in the semi-commercial laboratories.

The official announcement on the subject points out that the assembling of these different organizations within one building constitutes an almost ideal condition for the prosecution of research in the interests of the industry. McGill University will work upon the more fundamental problems on which the ultimate progress of the industry must depend; the Forest Products Laboratories represent the field of experimental research—the application of the findings of the fundamental workers to the specific conditions of the industry in Canada, and the Pulp and Paper Association will represent the application to industrial practice of the findings of the experimental laboratories.

The committee investigating the matter was composed of L. R. Wilson, Abitibi Power and Paper Company, Ltd; George Chahoon, Junior, Laurentide Company, Ltd.; Col. C. H. L. Jones, Spanish River Pulp and Paper Mills, Ltd.; C. Howard Smith, Howard Smith Paper Mills, Ltd.; I. H. Weldon, Provincial Paper Mills, Ltd.; J. B. White, Canadian International Paper Company, Ltd.; J. L. Apedaile, Price Brothers & Co., Ltd.; Geo. M. McKee, St. Maurice Valley Corporation, Ltd., and Edward Beck, secretary to the Canadian Pulp and Paper Association.

Two-thirds of the $350,000 required for the erection and endowment of the proposed laboratories has already been subscribed.

Sunday Work in Mills

It is not expected that the Provincial Government will take any early action on the report of the Commission which has been studying Sunday work in pulp and paper mills. It is pointed out that in pronouncing Sunday work as contrary to law, the Commissioners appear to have overlooked the judgment rendered by Judge Langelier on a complaint laid against a small paper company in this province some ten years ago for alleged violation of the Lord's Day Act. The judge dismissed the complaint with costs, holding that it had been established that the plant could not afford to run at all unless it was allowed six days continuous operation, which necessitated the doing of repair work on Sunday.

Edward Beck, secretary of the Canadian Pulp and Paper As-

sociation, in an interview stated that continuous production was first among the essential conditions for the successful operation of the industry in Quebec. He added: "In denying that the work carried on by the industry on Sunday falls within the exceptions provided for in arcticle 12 of the Lord's Day Act, the commission raises a controversial point which may necessitate judicial proceedings to determine. For instance, it would be impossible to produce a Monday morning newspaper without Sunday labor and such labor has been held to be permissible under the law."

The mills operate on a three shift system, and the men are only called upon once in three weeks for the Saturday night shift. Mr. Beck further said:

"In order to secure six days' continuous production some work is necessary during the 14-hour shutdown. This work involves making the necessary repairs, tuning the plant up for re-starting and preparing the necessary stock. While, as the commission states, this work could undoubtedly be done at other times, it would be done at the expense of production and would reduce the Quebec mills to a basis of five days a week actual operation. This would, of course, add materially to the cost of their product and, in the present highly competitive state of the news print market, would react to the great disadvantage of the industry."

Canadian Paper Box Association

The 11th annual convention of the Canadian Paper Box Manufacturers' Association has just been held in Montreal, many delegates attending. B. Sproule, of Toronto, vice-president, presided in the absence, through illness, of the president, J. L. Constantineau, of Montreal. In the president's address, read by Mr. Sproule, it was stated that the association now has 45 active members, which is nearly 70 per cent of the paper box manufacturers of the Dominion. There had been further improvement of business during the year, and business mortality among the members had been nearly nil since the inception of the association in 1915. The opinion was expressed that Canada was entering a period of tremendous development, and that the paper box industry would share in this.

S. J. Frame, secretary-treasurer, said there were 39 associate members in addition to 45 active members. Several papers were delivered, and a banquet was held in the evening.

Brompton Co. Lets Contract

The Brompton Pulp and Paper Company has let the contract for the erection of the steel work of its new news print mill at Bromptonville, Que., which has been awarded to the MacKinnon Steel Company, of Sherbrooke, Que. The price is said to be approximately $100,000.

Avon River Power Co.

The Avon River Power Company has begun work on its second development dam near Windsor, N. S. This will add to the Company's capacity for hydro-electric energy 4000 h. p., giving it a total of approximately 6600 h. p. It is expected that this second undertaking is preliminary to the establishment of a pulp and paper making plant on its property. With this in view the Company has secured control of the water ways in and around Windsor.

Another Mill at Port Arthur

It is reported that another big pulp and paper mill is shortly to be located at Port Arthur, Ont. The Nipigon Corporation, Ltd., under an agreement with the Ontario Government for woods limits, is to build a 400-ton pulp and paper plant. It is stated that an agreement with the city for a location on the water front is complete and that a public announcement will be made by the corporation in this regard in the very near future.

Canadian Paper Exports Increase

Canadian exports of pulp and paper in May showed a considerable increase over the previous month according to the report issued by the Canadian Pulp and Paper Association. Total exports for the month were valued at $13,143,410 as compared with $10,994,458 in April and with $12,451,667 in May 1925.

Exports of wood-pulp in May were valued at $3,756,685 and exports of paper at $9,386,725 compared with totals of $3,163,773 and $7,830,685 respectively in the month of April.

The following table shows the details for May and for May 1925.

	May 1926		May 1925	
PULP:	Tons	$	Tons	$
Mechanical	20,652	593,845	24,701	663,279
Sulphite Bl.	14,407	1,133,950	14,917	1,135,693
Sulphite Unbl.	21,451	1,224,524	20,620	1,051,699
Sulphate	12,756	804,366	11,537	717,493
	69,266	3,756,685	71,775	3,568,164
PAPER:				
News print	135,251	8,870,192	115,766	8,205,266
Wrapping	1,301	153,226	2,564	327,458
Book (Cwts)	7,830	62,595	1,098	12,929
Writing (cwts)	1,707	11,273	476	4,052
All Other	.....	289,439	.....	333,798
		9,386,725		8,883,503

Pulp and paper exports for the first five months of the year were valued at $68,179,870 as against $60,758,651 in the corresponding five months of 1925, which is an increase for the current year of $7,421,219 or over 12 per cent. Wood Pulp exports in this period amounted to $20,422,028 and exports of paper to $47,757,842, in each case showing a substantial increase over last year's figures:

Details for the period are as follows:

	5 months '26		5 months '25	
PULP:	Tons	$	Tons	$
Mechanical	117,250	3,405,710	107,792	3,111,524
Sulphite Bl.	79,767	6,251,425	76,559	5,648,545
Sulphite Unbl.	113,684	6,452,054	98,979	5,234,292
Sulphate	69,256	4,312,839	59,510	3,667,678
	379,957	20,422,028	342,840	17,662,039
PAPER:				
News print	676,214	44,559,989	562,570	39,882,114
Wrapping	8,098	1,038,822	8,992	1,236,271
Book (cwts)	20,178	175,455	13,056	120,857
Writing (cwts)	6,709	51,427	4,716	41,937
All Other	.....	1,932,149	.....	1,815,433
		47,757,842		43,096,612

In the five months' period the exports of wood-pulp amounted to 379,957 tons which was an increase of 37,117 tons or nearly 11 per cent. over the 1925 figures for the same period. All grades of pulp shared in this increase, the greatest gain being shown in unbleached sulphite in which there was an increase of 16 per cent.

Increases in the exports of paper were also appreciable in most grades. Newsprint shipments were 676,214 tons as against 562,570 tons in the five months of 1925, a gain of 113,644 tons or 20 per cent. Book and writing papers also showed substantial increases.

Exports of pulpwood, the raw material of the industry, have been smaller this year than for the last two years, the total amount exported during the first five months being 497,318 cords valued at $4,564,553 compared with 634. 926 cords at $5,972,198 in 1925 and 562,917 cords at $5,399,314 in 1924.

Buy Blackstone Glazed Paper Co. Stock

[FROM OUR REGULAR CORRESPONDENT]

PAWTUCKET, R. I., June 28, 1926.—The Blackstone Glazed Paper Company, manufacturers of glazed and coated papers at 163 North Bend street in this city, last week purchased the stock held in the company by James E. Brennan and the business will hereafter be operated by John E. McDevitt and Edward J. Rogan, two of the original founders, who have held the controlling interest since the beginning of the business.

Mr. McDevitt hopes to continue his personal relations with the paper trade and will in due course call on the trade as in the past.

The Blackstone Glazed Paper Company started manufacturing glazed papers over twenty-two years ago and has developed from a very small plant to the large mill which it now operates, one of the largest of the kind in the country.

Paper Distribution Improves in Philadelphia

Record for First Half of Current Year Slightly in Excess of Corresponding Period in 1925—Demand for Various Grades of Fine Papers Falling Off, Due to Seasonal Conditions—Warmer Weather and Influx of Visitors Lead to Boom in Summer Specialties

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., June 28, 1926.—As recording of accounts for the semi-annual inventory of business nears completion, distributors in the Quaker City territory are assured of improved conditions which have taken place within the past six months. Comparing accounts of the first half of 1926 with a similar period of 1925, disclosed that so far this year paper distribution has been in excess of last. While the average percentage of gain in the industry is not as gratifying as it should be for the activities of spring and early summer, there nevertheless is satisfaction to the dealer in the showing of improvement made. Prices have been stabilized, until within recent weeks, and profits consequently are in excess of last year, despite the failure of the markets to retain a normal distribution for this season of the year. June distribution so far is reported better than May, although still lacking in the customary briskness of demand for many lines consumed by manufacturing trades.

Fine Papers Give Way to Quieter Times

Although a few dealers are fairly active in catering to the demand of printing and publishing industries, the majority of paper houses report a slightly less active market for all grades of fine papers. While the falling off in demand has been most notable within the past week, it is not an uncommon occurrance for the late June orders to show contraction. Most dealers believe it is due to the advent of summer vacation days that the present quietness prevails or because of the inventory season, when all large industries are concerned with mid year stock taking. While present quotations are holding firmly, it is anticipated that some mill offerings are likely to be made with the coming summer months, particularly in such grades as the cheaper printing and book papers and sulphites, which customarily ease off in the warm weather slow down of mill operations.

Seasonal Specialties in Booming Market

With the clearing of the cooler weather which has prevailed until recent days, dealers are experiencing a boom for such seasonal specialties as cups, towels, ice cream and soda fountain requirements, paraffine specialties for outing or food products, napkins and other seasonal lines. So far the distribution has been far in excess of last year, and those distributing handling volume orders are enjoying the tremendous business which came with the turn in temperature. All records have been beaten for sales in these commodities within the past fortnight. The advent of a large floating population in the city in conjunction with the Sesqui-Centennial Exposition has vastly increased demands for summer time and sanitary paper products of these grades.

Coarse Papers Less Active

Except for the demand for seasonal specialties, the coarse paper market has become a listless affair. A few of the grades of wrapping papers consumed by the mercantile trades, such as clothing industries, have been fairly steady. Grease proof products, building papers, and fancy grades of wrapping used by the confectionery and drug trades have been moving along with the salable seasonal papers. Bags are in freer demand, but are subjected to the keenest of competition and resultant low prices.

Mills Operate From Hand to Mouth

Mill operations, locally, are reported of hand to mouth proportions, manufacturers not producing for future requirements, preferring to wait for a more definite trend of the wholesale market. All orders from the dealers now being listed are also confined to hand to mouth quantities. Inquiries, on the other hand, have been increasing with the waning June days, indicating an interest in the mill business on the part of the dealers.

Paper Stock Slightly Better

Demand for the commoner grades of paper stock has been increasing. With the turn of the trading in these grades, prices have been slightly advanced, commons having been raised $1 per ton, and container stocks also lifted accordingly. The demand however is confined to the cheaper grades, higher priced papers remaining stationary.

Paper Association Curtails Summer Meetings

With James McCracken, of the Riegel Company, as chairman of the meeting, the Philadelphia Paper Trade Association, fine paper group, met in the Bourse Restaurant last Wednesday, and took action on the summer schedule of sessions. It was decided to hold but a single meeting monthly during the hot weather months, instead of the bi-monthly sessions, returning to the customary gatherings in September. No action was taken on the change in the by-laws, the committee in charge of revisions having not yet perfected plans for the modernizing of rules and regulations governing the body. The next meeting will be held July 14.

William J. McGarity Displays Continental Banner

Rescued from a purchase of old rag stock almost a decade ago, a well preserved banner which waved over the exhibits at the Centennial Exposition in Memorial Hall, more than a half century ago, is now being displayed at the headquarters of the Penn Paper and Stock Company, 240 N. Front street. The flag is the official banner of the Centennial Exposition, measuring two by four feet, and its display is tied in with the present Sesqui-Centennial, commemorating the 150th anniversary of the Signing of the Declaration of Independence, just as the Centennial celebrated the passing of the century mark. It is expected that William J. McGarity, head of the firm, and secretary of the Philadelphia Wholesale Waste Merchants Association, will transfer the banner to one of the exhibits on the Sesqui Grounds, arrangements now being made for its removal. Many other relics have been salvaged from the rags that have come into the warehouse, among them a large quantity of national banners, which the owner has rescued from stocks bought up at various times, and removed to a more honorable place in the Penn Company's quarters.

W. S. Wilcox To Sail for Europe

W. S. Wilcox, of the Wilcox, Walter Furlong Company, 27 S. 6th street, will sail in mid July for an extended vacation trip to Europe. He leaves on July 13, sailing from New York, and will remain in European parts throughout the summer months.

Paper Men Take Part in Ad Men's Convention

Paper dealers and manufacturers were prominently identified with the conventions of the National Industrial Advertisers Association and the Associated Advertising Clubs of the World, held in Philadelphia at the Bellevue-Stratford Hotel throughout the past week. Among the Philadelphia dealers who were actively engaged in the entertainment of the visiting ad men were the new president of the Philadelphia ad fraternity, the Poor Richard Club, Morton Gibbons Neff, of the Dill and Collins Company; President Norbert A. Considine, of the Paper House of Pennsylvania, until his recent retirement from official representation in the ad club because of ill health, Vice President of the organiza-

President George W. Ward, of the D. L. Ward Company, and A. Richard Hartung, of A. Hartfung, Inc. As the new president of the Poor Richards, Morton Gibbons Neff was prominent on the reception and entertainment committees, and recipient of many honors by his fellow associates. Raymond J. Considine headed and arranged the big feature of the parade in the group depicting the origin and evolution and development of advertising, showing the earliest form of hieroglyphics, and tracing its history down through the invention of type by the Chinese, the smoke signals by the Indians, to our present day display and printed page exploitation. President Ward occupied an important part in the activities of the week as chairman of the Philadelphia Advertising Group Committee, and headed the elaborate 5th Division of the pageant and parade which opened the first day's program, one of the largest and most picturesque of the displays ever held under the auspices of the Associated Clubs. The Dill and Collins Company featured a reproduction of the old Rittenhouse Mill, the first to be operated in America, in the parade.

Importance of Trade Journal Advertisements

What Trade Journal Advertising has accomplished for the individual firm or group, co-operative advertising, and the importance of this phase of exploitation in the industrial world, was emphasized by the various speakers who comprised the program of the National Industrial Advertisers Association in its annual convention held in conjunction with the meeting of the Associated Advertising Clubs of the World. Beginning with the list of speakers topped by the national president of the association, Bennett Chapple, Director of Publicity of the American Rolling Mills Company, Middletown, O., and representing many leading industries of the nation, the entire personnel of the program stressed the effective of persistent advertising through the media of the trades press, newspapers, popular magazines, and techinal journals, reaching every possible avenue for the sales of the products of industry. Group or co-operative advertising through industrial journals, and through the commoner retail outlet of the public directly, through the columns of the newspapers was the theme of Secretary W. S. Hays, of the National Association. Of the 33 group advertisers selected for analysis of co-operative advertising from actual experience and practical standards it was shown that the campaigns were successful because they were worked out on sound planning, proper administration, ample finances and carried over a long period so as to register results. Mr. Hays stated: "Co-operative advertising will be a permanent asset to American business as long as it is founded on good advertising and economic principles and sound planning, proper administration, ample finances and a long enough period is allowed for the duration of the campaign." He also stated, "co-operative advertising being economically sound with proper support, it should be able to accomplish better results and more cheaply certain objectives, than the contributors of the members could individually." He estimated that millions have been spent in this type of advertising.

Paper Men Attend

Among the 200 members in the group of industrial advertisers were many representatives of the leading trade journals of the nation, through which these advertising campaigns are conducted for the promotion of sales of American products The sessions were continued through the four days at the Hotel Sylvania. Among the paper men were E. L. Johnson, S. D. Warren Company, Boston; H. H. Daquire, Hinde & Dauche Paper Company, Sandusky, O.. and Dan MacGuggan, Diamond State Fibre Company, Bridgeport, Pa.; and allies in the trade, Fred R. Davis, of the General Electric Company, Schenectady, N. Y.; Julius Hall, of the Link-Belt Company, Chicago; and E. F. Carley of the Du Pont Company.

Among the exhibitors who were featured in the big advertising displays arranged for the purpose of demonstration of the part that the graphic arts must play in successful campaigning in the advertising field with regard to paper, printed matter, displays and other materials, featured as part of the convention, were the District of Columbia Paper Manufacturing Company, Washington, D. C.; DuPont Company, Wilmington, Del.; Barrett Bindery, Chicago; Link Belt Company; Chicago. Belting Company, Chicago; Worthy Paper Company, Mittineague, Mass.; General Electric Company, Schenectady, N. Y.; Asbestos Shingle Slate and Sheathing Company, Ambler, Pa.; Dill & Collins Company, Philadelphia, and the International Chemical Company, Philadelphia.

Paper Men Join Printers in Outing

When the Reading Employing Printers Association held its annual outing last Saturday it invited the traveling representatives of the Philadelphia paper distribution trades to join in the many diversions and out door sports scheduled for the entertainment of its associates. Those who journeyed from the local paper trade to the picnic grounds on Mount Penn at Reading, Pa., were Winfield Predmore, James McCracken and E. J. Irwin, of Reigel & Co.; Clarence Garrett and Warren Christy, representing Raymond & McNutt; Joseph Miller and Edward Keller, of the Garrett-Buchanan Company, and Jack Layton, of the D. L. Ward Company. They participated in the baseball game, quoit matches, and novelty stunts, and joined with their associates in the allied industries in the Dutch Luncheon and evening banquet at the Mount Penn Hotel.

Graphic Arts Meeting

A special meeting was held by the Graphic Arts Department of the International Advertising Association in the Engineers Building at the University of Pennsylvania, with David Silve, of New York, consulting typographer, occupying the platform. He brought out the importance of the proper type of paper adapted for the ad matter with relation to quality, color, size texture and finish and design. In taking into consideration the printing and paper used for the ad matter he stressed the importance which should be given to selection of those grades which are best adapted to the ad message, and the class of consumer to be reached. These, he said, must express delicate feminine touches to reach the fair sex effectively, of rugged strength for products that are mechanical, or for such materials that appeal to the masculine consumer, or to reach the dignified business or professional man must be expressive of the qualities necessary to appeal to this class of trade. His talk was supplemented by Charles Austin Bates, advertising consultant of New York, along similar lines. J. Linton Engle presided at the meeting of the Graphic Arts Department. James Wallen of New York discussed illustrating. This meeting was attended by a large delegation of printers, paper men, and others identified with the graphic arts.

Officers elected to serve in the coming year were: president, W. A. Wolfe, Western Electric Company, New York; vice-presidents, Ezra W. Clark, Clark Tructtractor Company, Buchanan, Mich., and N. S. Greenfelder, Hercules Powder Company, Wilmington, Del,; treasurer, J. N. McDonald, Anaconda Copper Company, and secretary, H. P. Sigwalt, Milwaukee Corrugated Company, Milwaukee, Wis. The following were elected to the board of directors:—Allan Brown, Bakelite Company, New York; J. H. Hopkins, Chicago Belting Company, Chicago; E. P. Blanchard, Bullard Machine Tool Company, Bridgeport, Conn., and Julius Holl, Link Belt Company, Chicago.

Corporate Member

The latest addition to the TAPPI Corporate Membership is the Flambeau Paper Company, Park Falls, Wis., of which Guy Waldo is secretary and manager and Paul Joslin assistant manager. The plant is self-contained, manufacturing sulphite and mechanical pulp as well as paper. The grades are sulphite and groundwood specialties.

Produces a large volume of clean, strong stock at a great saving in power and floor space.
As good for pulp as the Bird Screen is for paper.
BIRD MACHINE COMPANY
South Walpole
Massachusetts
8704-E
BIRD
MACHINERY
Built for the continuous production of uniformly good pulp

Toronto Satisfactorily Closing First Half Year

Slight Improvement in Demand During Closing Days of June Will, It Is Expected, Make the Half Year Just Closing as Profitable as the Corresponding Period of Last Year — B. Sproule Elected President of Canadian Paper Box Manufacturers Association

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., June 28. 1926.—There has been some improvement in the paper trade during the past few days and jobbers are now hoping that during the remainder of the month, they will be able to show as large a turnover as in the corresponding one of last year. In most other avenues of industrial activity, outside of specialized and seasonable products, there has been a decline from last year but the paper trade keeps about the same and it is expected that, with the closing of the first half of 1926, the showing will be a little greater than for the first six months in 1925.

Coated paper mills are very busy and book and writing plants are also active. The exports of book paper during May showed an increase of some eleven hundred tons and for the first five months of 1926 have been decidedly larger than in the same period last year. The companies are devoting special attention to export and find the market a growing one. The pulp business is somewhat quieter than it was but such a condition is usual at this season. Prices are a little weaker. The rag and paper stock market is fair and there are no changes in prices to record.

The outstanding feature of the paper industry is the continuous active call for news print and all the mills are working to capacity. The Abitibi Power and Paper Company's plant at Iroquois Falls, Ont., broke another record in production a few days ago when over five hundred and fifty tons were manufactured within twenty-four hours.

Keeping Down Accident Record

The Abitibi Power and Paper Company, Iroquois Falls, Ont., started June 1, in an endeavor to have a "no accident month." Only three accidents have occurred so far this month which is a good showing, although coming short of the objective. While it is a big disappointment to the hundreds of men in the mill, who have been working hard to get through June without an accident, the majority of employees have the satisfaction that, in their departments, at least, no time was lost. In the grinder room and in the paper mill where the mishaps took place, they were of a minor character and the lost time was very small. Next month, the Abitibi Company hopes to come through the whole period without any black mark on the safety record of the plant.

Good Progress on Superior Mills

The Superior Paper Mills, who will shortly begin operations at Thorold, having been granted a fixed assessment for a term of years will turn out about twelve hundred tons a year of tissue paper and twenty-seven hundred tons of light weight specialty paper. The old mill of the Peerless Pulp and Paper Company, which has been idle for some years, is being fitted up with two machines of the cylinder and Fourdrinier types. J. M. Cathcart, of St. Catharines, and John T. Berhalter, of Toronto, are the principals in the Superior Paper Mills and both have had long experience in the paper line. The assessment of the company has been fixed at $10,000 for a period of ten years, a by-law to that effect having been carried by a large majority of the ratepayers on June 25.

Toronto Man Elected President

At the eleventh annual convention of the Canadian Paper Box Manufacturers Association, which was held last week in Montreal, there was a large representative attendance, B. Sproule, of Collett-Sproule, Limited, Toronto, who has been vice president for the past year, was elected president for the coming one. He has also served for some years on the Board of Directors. F. A. Fielder, of the Fielder Paper Box Company, Toronto, was elected vice president and S. J. Frame, of Toronto, was reappointed secretary-treasurer. A number of practical, instructive papers were read on manufacturing and cost systems and the delegates were hospitably entertained by the members of the Montreal trade. It was decided that the next convention would be held in Toronto.

Heavy Harvest of Pulpwood

The season for peeling pulp wood is progressing and in many counties in Ontario small lumber operators, settlers and others are taking out wood for shipment to the mills. There is a very fair market for the product and cutting and peeling has been carried on so far under much more favorable conditions than usual, there being an absence of black flies owing to the cool weather. Recent heavy rains have filled the streams up north so that driving operations to the open water at the mills or points of shipment have been conducted without delay. Many of the drives have already been completed. A number of new rossing plants are also being put in commission in the northern part of the province.

Good Prospects for Paper Mill Bylaw

It is believed that the by-law granting a fixed assessment to the Fort William Paper Company, Fort William, Ont., which will be voted upon in the near future, will be carried by a large majority. Mayor Crawford, in a recent address, said that attempts had been made to make Fort William a manufacturing center. No other industry was better suited for the lakehead than that of manufacturing pulp and paper.

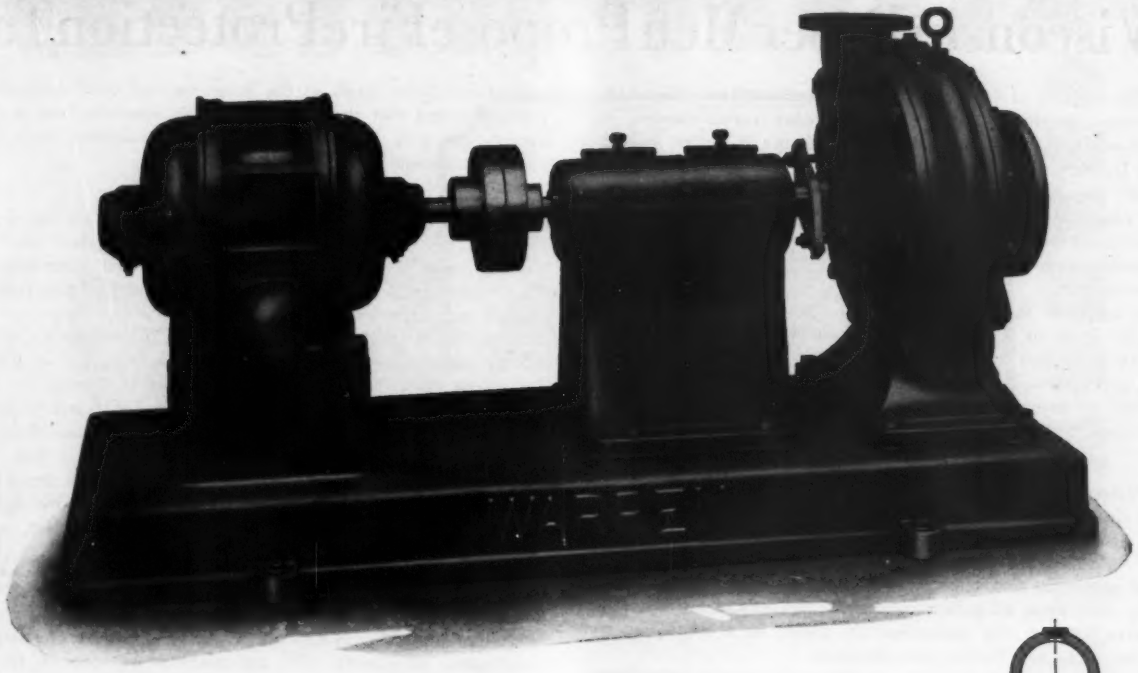
The present production of the Fort William plant is 150 tons of news print a day. Under the new arrangement the company intends erecting a sulphite plant with a daily output of 90 tons. This part of the building program will be completed by the end of the present year. In 1927 the company intends increasing its news print production to 200 tons per day. In 1928 another machine increasing production by another 120 tons daily, will be installed. By the end of 1931 another machine again increasing production by 120 tons daily, will be added, bringing the output of the plant up to 440 tons news print a day and 150 tons of sulphite. The firm would employ 700 men at least 250 days during the year.

Fort William, on the other hand, is agreeing to continue the present assessment of the company which is $261,000, until 1931. Commencing with that date and continuing for a period of ten years, the assessment will be raised to $300,000, on which, if the by-law carries, the company will pay full taxes as well as school and local improvement taxes.

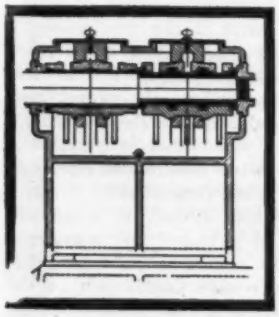
Want Forest Permit System

In connection with the campaign for the protection and preservation of the forests of Algona from fire, the Young Men's Civic Club, of Sault Ste. Marie, Ont., recently passed a strong resolution, urging that the Crown lands in the district be declared a travel permit area during the fire season. Anyone wishing to enter and travel about in such an area during the closed season, should be required to have a permit which, it is proposed,

(*Continued on page 36*)



Just Like You'd Build It Yourself!



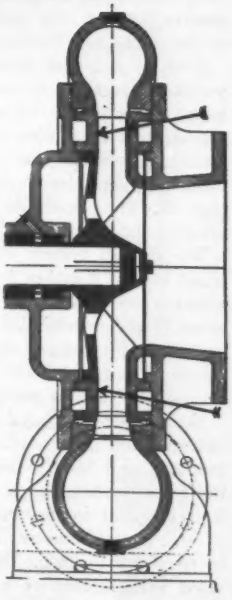
One Pedestal

Another exclusive Warren design feature. Both plain and thrust bearings are supported in one long, extra heavy pedestal. Perfect alignment is assured.

If you had the time and the facilities to design and build a pump that you'd consider ideal for handling pulped stocks we'll venture it would be like the Warren Stuff Pump.

Everything about this pump makes for high and sustained efficiency plus continuous dependability. It's a combination of carefully planned design by experienced pulp and paper mill pumping experts and high grade workmanship by an organization specializing in fine pumps for twenty-seven years.

Let us tell you more about this better stuff pump. Write for Bulletin containing complete information.



Renewable Case Liners

A feature that assures close running clearance between impeller and casing, and therefore high efficiency for the life of the pump. Only the Warren Stuff Pump has this important refinement of design.

Warren

Steam Pump Company—Warren, Mass.

Boston **Chicago** **New York** **St. Paul**

Philadelphia **San Francisco**

15

Wisconsin Paper Men Propose Fire Protection Tax

The subjects of forestry and taxation were freely discussed at a recent meeting of the Wisconsin paper manufacturers, held at Wausau, Wis., and attended by Dr. Hugh P. Baker, executive and D. A. Crocker, secretary-forester of the Woodland section of the Association, with the result that a committee representing the paper and pulp industry was instructed to forward recommendations to the Wisconsin Legislative Interim Committee on Administration and Taxation, as follows:

GENTLEMEN:

In response to your invitation to the wood using industries of the State to submit recommendations with special reference to forestry and taxation, a committee representing the pulp and paper manufacturers of the State, after several conferences, wishes to present for your consideration the following statement and recommendations:

A Few Guiding Principles

Protection from fire, taxation of forest lands, reforestration and forest recreation, which includes protection of our wild life are intimately connected in any solution of the problem of the right use of forest lands. In any effective plan of forest land protection and management, it is recognized that responsibility rests upon all parties concerned: timberland owners, resort owners, hunters and fishermen, the public as a whole, as well as the State and Federal Governments.

Forestry is a land problem and like agriculture is an economic problem. It must be recognized that the State has an investment in every acre of land, good and bad, and that the State, representing as it does the entire people, is under obligation to provide conditions that will allow owners of forest lands and industries dependent upon the forests to operate their plants that they may continue to contribute their fair share of taxation to the support of the State.

The present system of forest taxation is uneconomic and unsound in that it makes for rapid depletion of forests and not for sound conservation. In fact, the present system of forest taxation offers no incentive to the owner of cutover land to hold such land for reforestation purposes. It is not out of place to conclude that the State in continuing a wrong form of forest taxation has been a party to the rapid cutting off of our forests.

Because of the large capital invested in the pulp and paper industry, and in industries providing raw materials for the paper industry, and because of its standing among the industries of the State, ranking as it does second only to the dairy industry, it is essential to the welfare of the State and the permanency of the paper industry, that prompt measures should be taken by the State to insure the pulp and paper business and the other wood using industries with a permanent supply of wood. The value of the products of the paper and pulp industry in the State was well over $90,000,000 in 1925. It employs large numbers of men and women and generally makes for that economic development so essential to the future of the State.

Recommendations

In order to accomplish the ends sought in providing the wood using industries with a permanent supply of wood, and in order that the pulp and paper mills may secure needed wood supplies from within the States rather than continue expanding increasing sums of money for wood brought in from the outside, we believe that the State should immediately adopt and put into effect a forest program that will result in the shortest possible time in restoring our cutover lands to forest productivity. A program of reforestation for the State will, of course, accomplish a great deal more than the production of needed wood supplies in that forest cover means the conservation of water and of fish and game.

That the forest lands of the State may be made continuously productive and that they may become an insurable risk to their owners, the pulp and paper manufacturers through their committee recommend the following:

Effective Forest Protection

Wisconsin has no adequate system of protection for her forests from fire. She has been legally unable to appropriate funds for forestry until the passage of the recent forest amendment to the Constitution. We, therefore(recommend strongly that immediate appropriations be made by the State to carry out effectively the recommendations of the State Conservation Commission as outlined by C. L. Harrington, Superintendent of Forests and Parks, for a fire protective system for Wisconsin for 1926. Appropriations are now entirely inadequate for forest protective activities even on a small scale. We believe that there should be appropriated by the State for these activities not less than three cents per acre per year, at least until the State is thoroughly equipped with fire towers, telephone systems and fire fighting equipment. There should be maintained also a sufficient annual reserve to meet emergency fire fighting needs.

Responsibility of Timber Land Owners

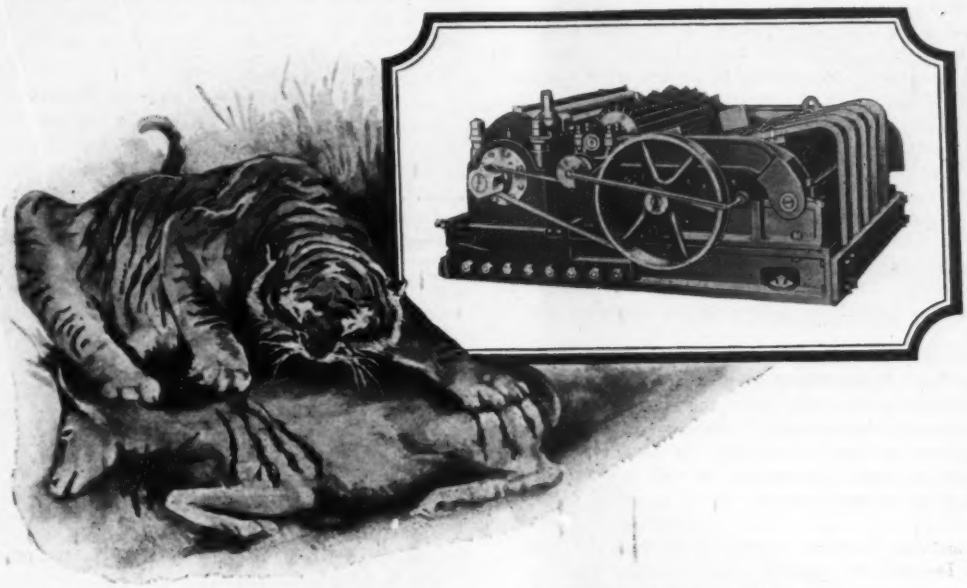
We appreciate and recognize the responsibility of land owners as well as the responsibility of the public for the protection and maintenance of forests. We are ready to recommend that all owners of forest land, both forested and cutover, shall assist in the protection of the forest from fire to the extent of one cent per acre per year, to be assessed at the time land is taxed. This recommendation is made with the understanding that timberland owners shall be represented in an advisory capacity on the board or the commission controlling the expenditures of fire protective and fire fighting funds.

Wisconsin Conservation Council

We recommend further that there be organized at once an advisory conservation council to assist in the development and carrying out of policies necessary for the protection and renewal of the forest. This council should be of particular assistance in educational work which seems vital to the proper understanding by the public of the necessity for the protection of the forests from fire. This council should consist of representatives from such organizations as trade associations representing the wood using industries of the State, recreational and fish and game organizations having particular interest in conservation, women's clubs with conservation departments and organizations of professional foresters, etc. The council should work in close co-operation with the State Conservation Commission.

Forest Taxation

The present method of taxation of forest lands compels their owner to cut stumpage as rapidly as possible. The present method of taxation of cutover land discourages their owner from holding them for reforestation purposes. As a result of this, large and increasing amounts of cutover lands are becoming delinquent —a loss of taxable property to the State. Therefore, we believe that the one thing which above all others will aid reforestation on cutover lands is a change in the system of taxation which will make it possible for the owner to hold such lands for a future crop. Unfortunately, no immediate legislative relief is possible. An amendment to the Constitution changing the so-called Uniformity Clause must be passed before such relief may be made effective. A joint resolution authorizing the submission of such an amendment (amendment to Sec. 1. Art. VIII) to the people passed the last Legislature. It must pass the next Legislature before it can be actually submitted to the people for referendum. We recommend, therefore, the immediate second



TEARING ACTION
~Not Cutting

The primary reduction of pulp laps or sheets for beater furnish can be accomplished either by tearing or by cutting. While we admit that the latter is the only practical method for breaking up extremely hard frozen laps containing over 50% water,—the tearing method has many decided advantages when the pulp is dry, partly dry or partly frozen.

The Arpeko Shredder has a clawing, tearing action, which reduces the pulp to particles slightly larger than a postage stamp. These particles have rough, open fibrous edges which readily absorb the water and quickly make a smooth mixture of disintegrated fibres. Pulp that is cut has smooth, closed compressed edges which retard the penetration of water and thus delay beater production. Furthermore, cutting parchmentizes the fibres and although these portions can be broken down in the beater, they cannot be drawn out,—therefore, they are liable to escape the various screening operations and appear as "Shiners" in the finished sheet.

Also, since the blades of the Arpeko Shredder claw and tear the pulp, instead of cutting it, they will shred 400 to 800 tons of dry pulp, without reconditioning, which is a much greater tonnage than can be obtained from knife blades.

Complete information about this machine together with installation diagrams is included in our Bulletin No. 100. Write for it today,—no obligation.

SALIENT FEATURES

(1) Suitable for dry, partly dry or partly frozen, laps, sheets or rolls.
(2) 50 H. P. Motor will operate at rate of 4 dry tons of hard kraft sheets per hour.
(3) Only 5 H. P. required to start and bring up to running speed.
(4) Timken Roller Bearings insure long life and save Power, Lubricant, Time and Repairs.
(5) Revolving blades will shred 400 dry tons without changing.
(6) Blades can be removed, conditioned and replaced by one man in three hours time.
(7) Pulp is shredded or torn, not cut insuring easy hydration.
(8) Shredded product contains 25% water due to shower at shredding point.

ARPEKO

Pulp Shredder ~ Chip Screen ~ Wood's Ideal Chip Breaker

RYTHER & PRINGLE CO.
Carthage, New York

passage of this amendment by the next Legislature and that the same Legislature provide means for submission of the amendment to the people of the State in the election of April, 1927, and if approved by the people, this same legislature should pass laws modifying the present system of forest taxation.

We recommend highly the appointment and work of your committee and the work of the United States Forest Service in its study of forest taxation. We believe that great good will come from these investigations, but pending results of these studies, we wish to emphasize our belief that a low land tax be applied and a yield tax be assessed when the crop is cut.

Forest lands should not be subjected to double taxation, but land and crop should be taxed separately: namely, a nominal tax on all cutover forest lands of five cents per acre with a so-called "yield tax" of approximately ten to fifteen per cent of the stumpage value of the crop to be determined and levied at time of cutting. The State should enter into contractual relations with the timberland owners in the carrying out of the law.

This law should apply to all classes of cutover land, including farmers' wood lots. There should be no upper limit as to area. Since the application of the principle of the yield tax on cutover lands may temporarily deprive certain townships of their present sources of income, we recommend that the State should provide for support of local government in such townships and be later reimbursed by the township at the time the yield tax is collected.

No recommendation is made relative to taxation on present forested areas, beyond the suggestion that for the present the assessment should be on a uniform basis with all other property in the taxing district, but it is our hope that eventually a plan may be worked out, whereby the nominal land tax and yield tax may be equitably applied to all classes of forest area, thus encouraging the holding of present stands as well as the growing of new timber. Prolonging the life of present stands, without undue burden on the owner, seems to us equally as important as promoting new growth, but we have not yet been able to work out a satisfactory suggestion for the inclusion of timbered lands under such a law.

Reforestation

As a phase of forest taxation in the State, we believe that while fire protection will bring about new growth on large areas of cutover land, there are certain lands which will bring about much more direct and quicker returns through planting, especially on State owned forest land. Such land will then become revenue producing, thereby contributing to the support of Government and to lessening the general burden of taxation in the State. The committee is, therefore, in favor of larger appropriations for a comprehensive reforestation program for State lands and the encouraging of reforestation on private lands by distribution of planting material at cost.

We expect to continue the study of forestry and taxation by a committee of the pulp and paper industry and request the privilege of submitting further data to your committee, should we have suggestions which we believe to be of benefit in the solution of these problems.—

Respectfully submitted,

W. R. WHEATON, C. R. CECIL, GUY WALDO, F. E. SENSENBRENNER, D. C. EVEREST, Committee representing the pulp and paper industry of the State of Wisconsin.

Bates Valve Bag Co. to Build

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 28, 1926.—The Morton C. Tuttle Company has just closed contract with the Bates Valve Bag Company, of Chicago, to construct a manufacturing building at Covington, Va. This building will be of structural steel frame, brick walls, and timber roof, 240 feet long by 80 feet wide, one story high. Plans are furnished by the owner, and work is to start at once.

TORONTO TRADE IMPROVES

(*Continued from page 32*)

to have available without putting the applicant to any unnecessary inconvenience. Other local bodies are also enforcing the permit system. Hon. James Lyons, formerly Minister of Land and Forests for Ontario, delivered an instructive address before the Young Men's Civic Club.

Dearth of Pulpwood Cutters

A report from the head of the Lakes states that the Port Arthur and Fort William, Ont., offices of the Employment Service of Canada were recently swamped with orders for pulpwood cutters. It was the first time in many months that the market had gone short on the supply of this class of labor. The dearth of bushmen was occasioned by the commencement of railway work. A large number of men who work in the woods in winter, join railway extra gangs and remain until the fall. Camps report difficulty in holding men at this time of the year on the job on account of flies and mosquitos.

Pacific-Burt Company Annual

The annual meeting of the Pacific-Burt Company was held recently in Toronto. S. J. Moore, of Toronto, is the president of the organization which since the opening of the present fiscal year have found prospects very promising. Mr. Moore stated that the outlook was for a better showing during the current twelve months than for the year ended March 31. General business conditions on the Pacific Coast, he said, were good, and the company was benefiting accordingly. The new plant being built at Seattle will be first-class and modern in every respect and will serve a large territory in which general business is growing rapidly. The present plants of the company are located at Emeryville and Los Angeles. The meeting generally was of a routine nature. The Board of Directors was re-elected without change.

Fort Edward Mill Making Improvements

[FROM OUR REGULAR CORRESPONDENT]

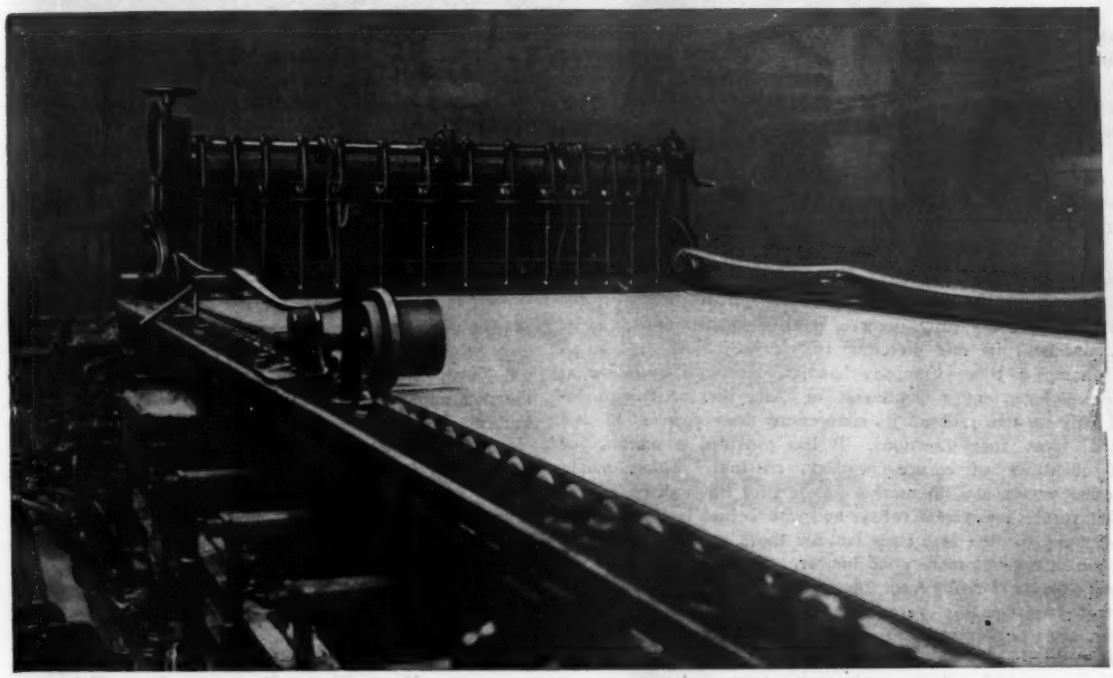
FORT EDWARD, N. Y., June 28, 1926.—A number of changes are planned for the near future at the Fort Edward Mill of the International Paper Company, according to information from official sources. Orders have been placed for two new machines and these are being constructed according to special plans prepared by the I. P. engineering forces. These two machines when delivered in the near future will replace the Harper and Fourdrinier machines which were rebuilt about a year ago to make the new product "cellutex." The new machines which are being constructed exclusively for this product, will turn out a larger production. The demand for "cellutex," it is said, has steadily increased since production was started at the Fort Edward plant and the two new machines to be installed will allow the mill to keep abreast of the increasing demand.

Numerous changes have been made at the Fort Edward mill since last fall when the production of "cellutex" was started on a large scale. Prior to that time experiments had been carried on for several months, one of the paper machines having been reconstructed for this work. This machine is one of the two which will be replaced by the new machines.

Paper Production in Japan

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 28, 1926.—The mills of the Japanese Paper Manufacturers' Association report a total output of 79,559,019 pounds and sales of 82,545,844 pounds during the month of February. Approximately half of the total production consisted of news print paper, amounting to 39,572,192 pounds, and the remainder chiefly of other printing papers, 20,038,361 pounds, wrapping papers, 4,316,977 pounds, and "torinoke" paper, 3,803,101 pounds. The last paper resembles vegetable parchment and is sold principally in China as a substitute for foreign parchments.



Specify Voith Inlets in Your New Paper Machine *Contracts*

If you are considering the purchase of a new paper machine, it will be to your advantage to have Voith Inlet Equipment incorporated in the regular machine specifications.

The Inlet represents a very small fraction of the cost of a new paper machine and the improvements and cost saving advantages obtained will enable you to secure maximum returns from the investment.

The construction and operating features of the Voith Inlet not only make it readily applicable to your paper machine but also make it adaptable to your product and conditions existing in its manufacture.

Write Today for 20-Page Voith Inlet Booklet

VALLEY IRON WORKS CO.

APPLETON, WISCONSIN

New York Office: 350 Madison Avenue

New Machines to Be Equipped With Inlets

Many purchasers of new paper machines now have Voith Inlet Equipment specified in the machine builder's contract. Within the past four months 10 orders have been received for Inlets to be attached to new paper machines when completed. One of these orders calls for a 234" paper machine installation and another for a 226" machine. These machines are to operate at a speed ranging from 1200 to 1500 feet per minute.

Reforestation Plans of Champion Fibre Co.

CANTON, N. C., June 28, 1926.—Among the timber companies of the South a considerable number have distinguished themselves by a steadfast policy of upbuilding local interests. Some companies have made towns with attractive buildings, parks, golf courses and similar local improvements. Others have fostered local industries which have tended to advance community interests. Still others have undertaken to maintain or increase the productiveness of the timberlands of their region and thereby perpetuate the timber industries.

Deserves Place of Distinction

Among companies that have worked towards permanent production and the regrowth of timber throughout its region the Champion Fibre Company, deserves a place of distinction, for its accomplishment in this direction has been definite and large. The Champion Fibre Company has its plant and operation at Canton eighteen miles Southwest of Asheville. Although located only on one railroad its connections draw supplies of raw material from four directions. It has provided a market for great quantities of spruce, hemlock, chestnut, poplar, maple and other woods, and the market was not for the high class lumber but rather for woods refuse and mill refuse and low grade lumber; not for the best trees but for those trees and parts of trees too inferior to make good lumber. Slabs and edgings from sawmills, tops and limbs from logging operations, these have been the main food for this operation.

Now, after twenty years of operation its effects on the region can be correctly appraised. The results are clear. It has helped to clean up the refuse both on big timber tracts and small timber tracts within a radius of 100 to 150 miles of Canton on the four branches of the Southern Railway which serve this plant.

One of Greatest Pulp and Paper Plants

A plant to have such an influence on so large a region must necessarily be large. The Canton operation is said to be the largest single industry in Western North Carolina, and it is one of the great pulp and paper plants of the United States. Its employees number some 2500. Its freight bill for raw materials and on finished products is something like $1,800,000 per year. Its annual wood requirements is in the neighborhood of 150,000 cords of 160 cubic feet.

A very large quantity of chestnut wood is used. This is first treated to recover the tannic acid extract, and this company is reported to be the largest producer of tannic acid in the country. After this process, the chestnut fiber is then used to produce pulp. In handling pine, the first step is to extract the turpentine, afterwards the fiber goes into pulp and paper.

It will be understood by those acquainted with the pulp business that the great variety of woods used in this plant is made possible because the operation employs three distinct processes of pulp making. Spruce and hemlock are prepared by the sulphite process, while chestnut, poplar, maple and other hardwoods are reduced by the soda process. The sulphite process is employed in reduction of pine pulpwood. The company is also a producer of a number of grades of finished paper. It has two large paper machines and uses the larger part of the pulp which it produces.

Growth of Industry Gradual

The growth of this industry has been gradual. It got underway about twenty years ago on a much smaller scale than at present. In its present development it is a monument to R. B. Robertson, its president and general manager, who has lived with it from its early days of operation.

Twenty years ago the timber of the region was in ragged condition. The best of it had been cut. The rough stuff was left. With the removal of this waste and rough timber the country has been prepared for new timber growth. The result is a surpassing stand of fine young forest. Instead of denuding the region, as it was thought at the start, the operation might do, it has been the means of making it far more productive. It has also greatly increased the natural beauty of the woodlands. This spring has greatly emphasized that feature. All over the mountains within 100 miles of Canton there is now generally a fresh young forest in the beauty of full and vigorous growth. In this way the plant has been not only a great industrial influence but a large esthetic influence that must be studied to be appreciated.

A Reserve Timber Supply

Realizing years ago that the region was being overcut, the company decided to build up for itself a reserve timber supply. It wanted especially to make sure of its supply of spruce and hemlock, because the general supply of these important woods in Western North Carolina was not large and the company thought that the time might come when the sulphite mill would be in want of timber. It, therefore, adopted a purchase program, which, while including a large acreage of hardwood, aimed particularly at spruce and hemlock. At heavy cost it acquired the principal bodies of these woods on the higher portions of the Smoky Mountains. Its holdings are now large, aggregating some 125,000 acres, probably as much as 100,000 acres of which is virgin timber, and for the larger part is truly virgin, never having been cut into for any purpose whatever. So far as its lands have been cut by the company its operations have been under careful forestry plans and much attention has been given to fire protection. The second growth lands are in excellent condition.

Uncut Timber Represents Large Value

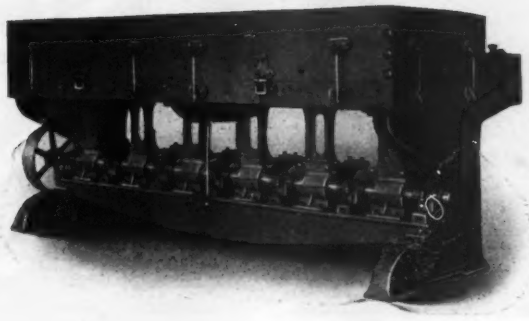
The uncut timberlands of the company represent very large values whether they be considered from the point of view of future supply for this operation or for the general market. The company, however, considers its timberlands only in reference to its own operations. The timberlands are the guarantee of the future life of the great plant and the development of the operation. Without the timberlands the immense plant would have to be written off within a few years, particularly the Sulphite portion of the operation. With its present supply of timber the life of the sulphite mill appears to be safeguarded for some 35 to 40 years, while the Soda and sulphate mills appear to be fortified for operation in perpetuity.

As another step, the company has undertaken the improvements of its lands. It has already begun the planting up of open places, consisting of old field and burns. It is now developing nurseries which will furnish annually several million trees. It will steadfastly pursue the policy of planting until all gaps are filled. It is also pursuing the plan of improving the quality of its timber stands by improvement cuttings. This work can especially be done on sites near the railroad where rough material which it is necessary to handle can be removed at low cost. By reason of furnishing its own market and easy accessibility to railroads, the company is thus able to introduce methods more intensive than even the Government has been able thus far to put into effect in this region.

Fire Protection System

It is almost needless to say that a fire protection system has been worked out, as every one will understand that this is fundamental. It was the first thing to be done. The system consists of patrolmen and wardens whose work coordinates with that of patrolmen and wardens of the State and Federal Government. The aim is for quick detection in the case of every fire and then quick action in handling it. The fire problem in this section is about as acute as anywhere in the East. The mountain slopes are long and very steep. Spruce and hemlock, which form the forest of the high steep slopes, result in heavy slash, conse-

(*Continued on page 74*)



Diaphragm Screen

The "New Keystone" Diaphragm Screen is carefully constructed of the highest grade materials. Every requirement of a good screen has been fully met.

The bearings are ring oiling, babbitt lined and are mounted on detachable taper blocks, which permit removal of the bearing while the screen is in operation.

A Few Users

MacAndrews & Forbes Co., Camden, N. J.
Auglaize Box Board Co., St. Marys, Ohio.
Southern Board & Paper Co., Vernon, Cal.
National Fibre & Insulating Co., Yorklyn, Del.

DOWNINGTOWN MANUFACTURING COMPANY
Paper and Pulp Mill Machinery
EAST DOWNINGTOWN, PA., U.S.A.

Field-Ernst Envelope Co. In New Building

NEW OFFICES OF THE FIELD-ERNST ENVELOPE COMPANY

SAN FRANCISCO, Cal., June 25, 1926.—The Field-Ernst Envelope Company, manufacturers of envelopes, recently moved into a new building which had been remodeled to suit their needs. The new domicile is at 45 Fremont street, a few doors away from the former location at 25 Fremont street. The new structure is a class A building, built of steel and brick. It consists of four stories and basement, including not less than 32,000 square feet of floor space.

NEW BUILDING OF THE FIELD-ERNST ENVELOPE COMPANY

Offices of the Company

The offices of the company, which are on the ground floor and at the front, occupy 4000 feet and are divided into five sections. They are large and commodious and handsomely finished in yellow grained oak. There are separate offices for sales, for each of the heads of the company, and for the general office staff. There is also a large filing room adjacent to the office. On the same floor are located also a telephone exchange and a fine reception lobby.

Thoroughly Modern

The building is thoroughly modern and provides for the company all the facilities to carry on the business on thoroughly efficient lines. On the top floor are located the batteries of printing machines and the special-made envelope department where the force of young women turn out special work with surprising rapidity. The third floor is occupied by the cutting department and folding machines. The superintendent's office is also located there.

Shipping Department

In the rear of the first floor are storage space and the shipping department, which also has direct access to the street. An elevator of large dimensions is advantageously located both for incoming and outgoing shipments. A mezzanine floor, divided into two sections, takes care of the needs of stationery supplies and a direct mail department and sample room.

Started Business April 1, 1920

The Field-Ernst Envelope Company is made up of Alan D. Field and Joseph A. Ernst. They started business on April 1, 1920. The plant was a very small one, and the monthly volume comparatively unimportant. There were nine people in the entire organization including the mechanical employees. They have doubled and redoubled the volume many times and now have a staff of eighty people. They sell over the entire Pacific coast and occupy a very prominent place in the envelope manufacturing industry.

Plant Expanded Steadily

Their plant equipment has grown steadily and has the newest and best machinery for the production of stock envelopes and special orders. Mr. Field is at the head of the executive and sales and Mr. Ernst is in entire charge of manufacturing. The company does a great volume of business for printers and has made a specialty of that particular line of activity. The company also specializes in good printing on envelopes. Special equipment enables them to turn out excellent two color-work in reproducing trademarks, packages, and slogans which incorporate considerable advertising value into envelope printing.

If an insufficient or low pressure water supply leaves you unprotected, or with high insurance rates—get an "American" pump on the job! "American" Fire Underwriters' pumps are the best insurance against fire. Are you fully protected at an economical rate?

Branch Offices:

Chicago, Ill.	First National Bank Bldg
Milwaukee, Wisc.	Wisconsin National Bank Bldg.
New York, N. Y.	165 Broadway.
Dallas, Texas	Western Indemnity Bldg.
San Francisco, Calif.	635 Mission St.

District Sales Agencies:

Philadelphia, Pa.	Kansas City, Mo.	Denver, Colo.
Pittsburgh, Pa.	Joplin, Mo.	Salt Lake City, Utah
Cleveland, Ohio.	Atlanta, Ga.	Phoenix, Ariz.
Detroit, Mich.	Birmingham, Ala.	Los Angeles, Calif.
St. Paul, Minn.	Jacksonville, Fla.	Charlotte, N. C.
Omaha, Nebr.	New Orleans, La.	Calgary, Alta., Can.
St. Louis, Mo.	Roswell, N. Mex.	Boston, Mass.

THE AMERICAN WELL WORKS

General Office and Works
AURORA, ILL.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Bridgeport, Pa.—The Christian B. Daring Paper Manufacturing Company has authorized plans for extensions and improvements in its local mill, including the installation of additional equipment. The expansion is estimated to cost about $35,000.

Chicago, Ill.—The Cleary Box Company, 3315 West 48th Place, manufacturer of corrugated boxes and containers, has completed plans and will proceed with the erection of a new one-story addition to its plant for considerable increased capacity. It will be 50 x 135 feet, estimated to cost about $35,000, located on South Turner Avenue. A general building contract has been let to Heidel & Beck, 6235 South Michigan Avenue, Chicago. A. Epstein, 2001 Pershing Road, is architect and engineer. Charles H. Cleary is president and treasurer.

Houston, Texas—The Houston Paper Stock Company, 814 Commerce avenue, is planning the early rebuilding of the portion of its storage and distribution plant recently destroyed by fire with loss estimated at close to $100,000, a portion of which represents paper stock.

Indianapolis, Ind.—The Central States Envelope Company, East Washington street and Sherman Drive, has plans nearing completion for the erection of a new paper goods factory addition, to be two-story, 80 x 150 feet, reported to cost close to $40,000, with equipment. Bids will soon be asked. An award for excavation has been let to John C. Douglas, 5106 Pleasant Run Parkway. Harrison & Turnock, Board of Trade Building, Indianapolis, are architects.

Fort Worth, Texas—Plans have been arranged for a merger between the Bunker Paper Box Company and the Bunker Printing Products Corporation, both of Fort Worth, with a combined capitalization of $1,000,000. Work will soon proceed on a new building to house the consolidated company, to be one-story, 200 x 400 feet, reported to cost in excess of $50,000, including machinery. The company purposes to use present equipment so far as possible and install new machinery for increased output. It is understood that additional paper box-manufacturing equipment will soon be acquired. **The Austin Company**, Euclid avenue, Cleveland, Ohio, has prepared plans for the new structure. Butcher & Sweeney, 806 Taylor Street, local contractors, will be in charge of erection.

Holyoke, Mass.—In connection with reorganization plans of the American Writing Paper Company, it is purposed to retain sixteen of the present twenty-eight plants of the company, and to make extensions and betterments in these different mills over a period of months. Sidney L. Willson, receiver for the company, has recommended an appropriation of $1,250,000, for this work, to include reconditioning, machinery replacements, new equipment, and building remodeling and expansion. It is planned to dispose of the other twelve plants of the company within a period of 24 months for a consideration approximating $1,400,000. The new company will arrange for security issues to an amount of about $15,500,000, including $9,000,000 in preferred stock; $5,500,000 in bonds; and $1,000,000, in notes.

Brooklyn, N. Y.—The Blue Ribbon Paper Bag Corporation has leased space in the Bush Terminal at South Brooklyn, comprising a section of the basement in Building No. 2, to be used for general storage and distributing service.

Whippany, N. J.—Richard W. McEwan, a member of the firm of McEwan Brothers, with local paper mill, has disposed of a large tract of property, totalling about 40 acres, near the Whippany River, to the Bell Telephone Laboratories, Inc., 463 West Street, New York, which will use the site for a radio testing station.

Great Works, Me.—The Penobscot Chemical Fibre Company has completed plants and will soon proceed with the erection of a new addition to its mill, comprising a remodeling and rebuilding of the soda pulp drying division. It will be 56 x 186 feet. Additional equipment will be installed. A general contract for the building work has been awarded to the Morton C. Tuttle Company, Park Square Building, Boston, Mass.

Salem, Ore.—The Oregon Pulp and Paper Company has work in progress on the proposed new addition to its pulp mill and will push the structure to early completion. It will be located on South Commercial Street, and is estimated to cost in excess of $200,000, with equipment. A list of machinery to be installed has been arranged, to provide for considerable advance in former output.

Leaside, Ont.—The Mistassini Power & Paper Company, Ltd., Drummond Building, Montreal, Que., recently organized, has acquired property in the Leaside district heretofore held by the Leaside Engineering Company, Ltd., including water power sites. Plans are under way for the erection of a news print mill with initial capacity of about 200 tons per day. It will consist of a number of buildings, with power house, pumping station and auxiliary structures, estimated to cost in excess of $1,750,000, with machinery. The company also purposes to construct a hydroelectric power plant for service at the new mill. The engineering department will be maintained in building noted at Montreal. S. A. Wallberg is president, and John Staller, general manager.

Victoria, B. C.—The Sydney Roofing and Paper Company, Ltd., has commenced preliminary construction for its proposed new mill for the manufacture of cardboard stocks, to consist of a main multi-story unit with auxiliary structures, reported to cost in excess of $200,000. The company is also considering enlargements in its mills in the vicinity of Vancouver, B. C., and has recently additional land for this purpose.

Limoilou, Que.—The Anglo-Canadian Pulp and Paper Mills, Ltd., has commenced preliminary construction for its proposed new local newsprint mills, to consist of several units with ultimate capacity of about 450 to 500 tons. Initial work will be concentrated on a unit of the plant, with purpose of having available for service at an early date. It is expected to cost about $1,000,000, with machinery. The entire plant will represent an investment in excess of $6,000,000, complete.

New Companies

Brooklyn, N. Y.—Hunt's Modern Paper Products, Inc., has been incorporated with a capital of $200,000, to manufacture paper goods. The incorporators are B. Machinist, A. D. Levy and J. Manne. The company is represented by Louis Ehrenberg, 277 Broadway, New York.

You're welcome to our experience

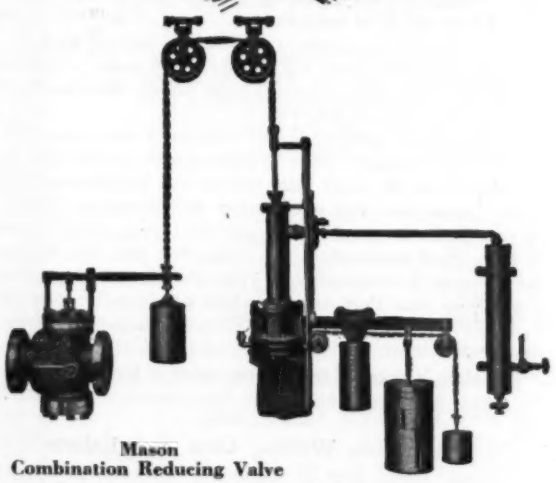
Mason Regulator Company engineers always stand ready to give you the benefit of their wide experience with pulp and paper mill pressure control problems.

The accumulated experience of forty-three years of specialization in pressure control is at your command at all times.

And the continued operating efficiency of every Mason Regulator interests us just as much as its selection and installation.

You can depend upon Mason Regulators for every service in the pulp and paper mill.

Have you a copy of Catalog 62 containing complete information and valuable engineering data?



Mason
Combination Reducing Valve

Specially designed for accurate control of pressures under conditions of widely varying demand. High initial pressures and superheat do not affect the dependable operation of this valve. It is especially suitable for use on digesters and paper machines.

41

Mason Regulators

MASON REGULATOR CO.
Boston, Mass.

San Francisco Office, 606 Howard Street
Mason Regulator Co. of Canada, Ltd.
314 Notre Dame St., West, Montreal

New York, N. Y.—The Louis Paper Box Company has been incorporated with a capital of $15,000, to manufacture paper boxes and containers. The incorporaters are L. Swerdloff and L. Pisetzner. The company is represented by B. N. Brody, 261 Broadway, New York.

Wilmington, Del.—The American Peat & Fibre Corporation, care of the Corporation Trust Company of America, du Pont Building, Wilmington, has been incorporated with a capital of $1,325,000, to manufacture fiber products and kindred specialties

New York, N. Y.—Joffe Brothers, Inc., has been incorporated with a capital of 150 shares of stock, no par value, to manufacture paper boxes and containers. The incorporators are B. and N. Joffe, and S. Wyler. The company is represented by J. Levy, 256 Broadway, New York, attorney.

Wichita Falls, Tex.—The Empire Paper Company has been incorporated with a capital of $30,000, to manufacture and deal in paper products. The incorporators are George Gutzman, L. H. Estes and C. H. Cannon, all of Wichita Falls.

Wilmington, Del.—The Fibre Tube and Insulation Company, care of George C. Hering, Jr., Citizens' Bank Building, Wilmington, has been incorporated with a capital of $100,000, to manufacture fibre products.

Bluefield, W. Va.—The G. D. Woods Company has been incorporated with a capital of $10,000, to manufacture and deal in writing papers, and other stationery products. The company is headed by G. D. Woods, Bluefield.

Virginia-Carolina Golf Tournament

RICHMOND, Va., June 24, 1926.—Under the auspices of the Virginia-Carolina Paper Trade Association, a golf tournament was held at Virginia Beach, June 17 and 18. The match was played over the course of the Princess Anne Country Club. This was the quarterly meeting of the association, and the first invitation golf tournament. Various mill men were invited to participate in the play, and the affair proved so successful that it is planned to make it an annual event. The business meeting of the association was held at the Chalfonte Hotel, which is only a short distance from the Princess Anne Club. All voted this the most enjoyable outing yet held by the association, as the place was ideal for this time of the year.

The feature of the tournament was the excellent score made by Carl C. Whitaker, vice-president of the Cauthorne-Southern Paper Company, and Roger Taft, of the Hammermill Paper Company. Notwithstanding the fact that the Princess Anne course is one of the most difficult in the country to play, these two gentlemen played their usual consistent game. The beautiful Cauthorne Trophy was won by Roger Taft, who was also the winner of Thursday's Low Gross prize. No contestant could win more than one prize other than the Cauthorne Trophy.

Prizes were awarded as follows: Thursday's Low Gross Prize, Roger Taft; Thursday's Low Net Prize, C. W. Graham; First Flight Low Gross, Fred Peck; First Flight Low Net, G. H. Grauer; Second Flight Low Gross, J. G. Sutton; Second Flight Low Net, Henry Atwater; Low Gross 54 Holes, Carl C. Whitaker; Low Net 54 Holes, Bob Johnson; Lowest 18 Hole Score, Harrison Baldwin, and Cauthorne Trophy, Roger Taft.

Rate on Printing Paper Found Unreasonable

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 28, 1926.—The rate on printing paper other than news print in carloads from Spring Grove, Pa., to Nashville, Tenn., has been found unreasonable, and unduly prejudicial by the Interstate Commerce Commission and to be in violation of the fourth section. Reparation has been awarded to basis of rate found reasonable. No damage shown to have resulted from the undue prejudice or fourth-section violation.

This decision was rendered by the Commission in the case of Clements Paper Company against the Tennessee Central Railway Company.

Zellerbach Corp. Has Prosperous Year

SAN FRANCISCO, Cal., June 24, 1926.—Operating resources of the Zellerbach corporation for the fiscal year ended April 30, 1926, were most satisfactory, according to the president's report to the stockholders, reviewed by Blyth, Witter & Co., and J. Barth & Co. A very considerable increase, both in gross business done and net profits realized as compared with operating results for the previous year, is noted.

After providing liberally for depreciation of properties and setting aside ample reserves for whatever losses can be foreseen, the net earnings of the company for the year, after all charges, including interest on bonds, bond discount and amortization of premiums and federal income taxes, amounted to $2,156,274. This amount of net earnings is equivalent to $35.93 per share on the 60,000 shares of convertible preferred stock now outstanding. On the capital structure, as it actually existed during the year, the earnings carried to surplus were equivalent to $2.80 per share of common stock. Dividends of $1.50 per share were paid on the common stock.

During the year the company's financial structure was strengthened by the redemption of most of the funded debt and preferred stocks of subsidiaries through the issuance of 60,000 shares of convertible preferred stock, paying $6 annual dividends. Had the present financial structure been outstanding during the year net earnings carried to surplus for the payment of dividends would have been approximately $231,370 greater than the figure shown and earnings on the preferred and common stocks would have been $39.60 and $2.84 respectively.

The balance sheet shows a very strong current position. The only current indebtedness is $300,000 of bank loans. Cash amounts to $960,885. The current assets exceed current liabilities by $8,321,937, the ratio being nearly 4 to 1.

An important addition to the company's manufacturing plant has been undertaken. There is being constructed at Port Angeles an addition to the news print mill of the Washington Pulp and Paper Corporation that will increase the production of this plant by over 80 per cent and that should effect a considerable reduction in the cost of manufacture. In connection with this development the company is constructing a hydro-electric power plant on the Elwha river near Port Angeles, which will include a dam 200 feet high and produce an additional electrical output of 12,000 kilowatts.

This plant is expected to be in operation in May or June of 1927. No special financing is needed for the completion of this addition.

American Writing Gets Tax Rebate

HOLYOKE, Mass., June 28, 1926.—The outstanding news of the paper industry during the past week was the announcement that the government had rebated to the American Writing Paper company of Holyoke $1,297,048.90, covering the internal revenue charges from 1917 until 1920.

Claim had been made for the rebate from the government some time ago and the matter has been pending judicial decision for many months, and adjustment of the claim effected during the past week. President S. L. Willson of the American Paper Company made the following statement in regard to the rebate; "For the past four years representatives of the internal revenue department have been examining the tax returns of the company. Investigation was based upon the claim of capital investment and the relation to income and excess profits during the years 1917-1918-1919-1920. The report of the field agent resulted in an additional assessment of $1,581,426.97. During the past two years this claim has been contested by the company with the result that a rebate of $1,297,048.90 was allowed."

Speaking of business conditions at the present time President Willson added, "This company during the past six months has made a more satisfactory showing than at any time during the past six years, notwithstanding the handicaps attending a receivership."

New Departure Quality Ball Bearings

Better Paper at Less per Ton

THERE are numerous places in every paper mill where New Departure Ball Bearings have special advantages—where they save power, reduce lubrication and maintenance costs and assure a more uniform and cleaner product.

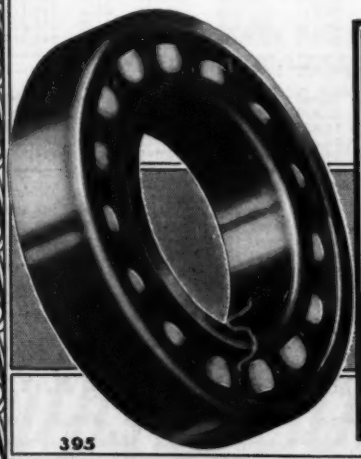
Our engineers will be glad to outline advantages in specific machines as listed below and to recommend ball bearing mountings and enclosures to fit your individual needs:

Electric Motors	Shreaders	Screen Rollers
Stokers	Conveyors	Dandy Rollers
Oil Burners	Beaters	Dryer Rollers
Thrashers	Pulpers	Pumps
Dusters	Idle Rollers	Etc.

Write for engineering application bulletins on paper making machinery and state what particular installations you are considering.

THE NEW DEPARTURE MANUFACTURING COMPANY

Detroit Bristol, Connecticut Chicago



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New York Trade Jottings

Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, is spending the month of July in northern Wisconsin.

* * *

A. L. Hawkes, executive vice-president of the General Chemical Company, of 40 Rector street, New York, has tendered his resignation, and has been elected vice president of Congoleum-Nairn, Inc., of Philadelphia.

* * *

A post card from Colombo, Ceylon, dated May 25, was received from Horace N. Lee, formerly wood technologist for the Hammermill Paper Company. Evidently Mr. Lee is taking a trip around the world.

* * *

The National Council of Travelling Salesmen held its annual meeting on Tuesday and Wednesday at the Hotel Pennsylvania, New York. Among the topics discussed were the Pullman car surcharge and the mileage railroad books.

* * *

Major O. M. Porter, assistant secretary of the American Paper and Pulp Association, arrived in New York on Monday aboard the new Swedish-American liner *Gripsholm*, after a long European tour in the interests of his organization.

* * *

Aksel Arstal, of Oslo, was in New York last week, after visiting the paper mills of Canada, and the United States. Mr. Arstal represents the Norrona Company, which has been building a grindstone for mechanical pulp for several years, that is quite largely used in Norway and Sweden. Perkins-Goodwin are the American agents.

* * *

New York Stock Exchange listing has been granted to the Crown-Willamette Paper Company, first preferred allotment certificates, representing 149,000 shares no par first preferred stock, voting trust certificates for 149,000 shares of no par common, and $20,000,000 first mortgage 6 per cent sinking fund gold coupon bonds, due January 1, 1951.

* * *

Directors of the Corn Products Refining Company, of 17 Battery Place, New York, have declared an extra dividend of 25 cents a share and the regular quarterly dividend of 50 cents a share, both payable July 20 to stock of record July 2. In addition they have declared the regular quarterly dividend of $1.75 on the preferred stock, payable July 15 to stock of record July 2. The extra disbursement on the common is payable out of surplus earnings for the six months ended June 30.

* * *

Summer, the season of picnics and outings, again finds the Metropolitan Bag and Paper Jobber's Association engaged in arranging for its regular annual outing. It will take place on Thursday, August 12, at Karatsonyi's Hotel, Glenwood, Long Island. Those who have attended these affairs before know the high standards they have achieved, but George W. Batz, chairman of the entertainment committee, claims that this year all records will be surpassed. The arrangement committee is as follows: George W. Batz, chairman, and Alfred E. Macadam, Jr., Nelson Berger, Samuel Fishman and Clarence Stein.

* * *

At a special luncheon meeting of the New York division of the Salesmen's Association of the Paper Industry, held at the Town Hall Club, New York, Secretary D. A. Crocker was welcomed back after a long stay in south-west Virginia, where he has been conducting a survey of the timberlands and resources of that section. Mr. Crocker gave the members an interesting account of his experiences in the South. Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, addressed the gathering on his recent trip to the West, and his excellent talk was greatly appreciated by those present. There was a very good attendance. This event will be the last meeting of the New York division until after Labor Day, when the weekly luncheon meetings will be resumed.

Box Board Production for May

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 30, 1926.—May production of boxboard, based on reports by 89 firms operating 111 plants to the Department of Commerce, was 113.7 per cent of capacity, as compared with 105.3 per cent in April and 87.1 per cent in May, 1925. In the following table which represents a detailed statement of the operations of boxboard mills, the capacity data vary according to the normal number of working days in each month, Saturdays, Sundays, and holidays being excluded since the five-day week was adopted by about 80 per cent of the mills.

Year and Month	Operation			Production			Unfilled Orders (end of month)	
	Inch hours		Per cent of Capacity	Tons		Per cent of Capacity	Orders received	
	Capacity	Operated		Capacity	Output		Tons	
1924								
Jan. ...	9,855,612	8,542,957	86.7	229,814	181,953	79.2	198,156	111,825
Feb. ...	9,476,550	8,290,289	87.5	220,975	179,854	81.4	167,855	103,643
March .	9,855,612	9,194,400	93.3	229,814	200,411	87.2	195,635	97,181
April ..	9,855,612	8,574,444	87.0	229,814	182,817	79.5	158,980	73,829
May ...	9,855,612	8,253,431	83.7	229,814	173,483	75.5	165,868	68,486
Total (5 mos.)	48,898,998	42,855,521	87.6	1,140,231	918,518	80.6	886,494	.....
1925								
Jan. ...	7,960,302	8,388,897	105.4	185,619	199,633	107.5	199,649	112,911
Feb. ...	7,600,440	7,550,968	99.3	177,320	177,292	100.5	162,724	100,403
March .	8,360,484	7,569,995	90.5	197,186	179,067	91.0	169,924	90,062
April ..	8,360,484	7,654,378	91.6	197,186	185,866	94.3	169,914	79,127
May ...	7,980,462	7,111,776	89.1	188,223	163,956	87.1	175,246	83,415
Total (5 mos.)	40,262,172	38,276,014	95.1	945,534	905,814	95.8	877,457	.....
1926								
Jan. ...	7,600,440	7,808,482	102.7	179,260	192,413	107.3	207,657	118,531
Feb. ...	7,600,440	7,664,277	100.8	179,260	191,804	107.0	178,076	104,578
March .	8,740,506	8,826,757	100.9	206,149	220,515	107.0	214,733	102,362
April ..	8,360,484	*8,446,867	*101.0	197,186	*207,653	*105.3	*200,183	*89,622
May ...	7,600,440	8,263,478	108.7	179,260	203,883	113.7	198,091	83,293
Total (5 mos.)	39,902,310	41,009,853	102.8	941,115	1,016,268	108.1	998,740	.....

Year and Month	Shipments of boxboard	Stocks of boxboard, end of month	Consumption of waste paper		Per cent of Capacity	Stocks of waste paper, end of month	
			Tons			On hand	In transit and unshipped purchases
	Tons		Capacity	Consumed		Tons	
1924							
Jan. ...	179,947	46,696	217,828	170,291	78.2	132,010	55,215
Feb. ...	176,037	50,513	209,450	169,644	81.0	127,259	41,453
March .	202,097	48,827	217,828	186,463	85.6	144,118	39,897
April ..	182,532	49,112	217,828	169,573	77.8	155,519	27,631
May ...	170,821	51,774	217,828	165,479	76.0	142,319	38,486
Total (5 mos.)	911,434	246,922	1,080,762	861,450	79.7	.....	.....
1925							
Jan. ...	195,501	52,466	175,938	193,285	109.9	172,382	53,820
Feb. ...	176,101	53,960	167,910	170,023	101.3	172,456	43,745
March .	180,418	51,835	184,778	170,363	92.2	176,035	36,147
April ..	179,772	57,212	184,778	170,487	92.3	186,530	32,593
May ...	168,353	53,327	176,379	159,095	90.2	174,726	38,815
Total (5 mos.)	900,145	268,800	889,783	863,253	97.0	.....	.....
1926							
Jan. ...	192,989	47,714	167,980	182,702	108.8	168,459	44,477
Feb. ...	190,878	48,472	167,980	182,278	108.5	162,382	53,985
March .	216,857	52,049	193,177	208,197	107.8	151,253	42,971
April ..	*208,818	*51,449	184,778	*198,163	*107.2	*145,875	*50,803
May ...	204,479	51,220	167,980	188,622	112.3	136,647	44,802
Total (5 mos.)	1,014,021	250,904	881,895	959,962	108.9	.....	.....

* Revised.

Buys Mill at Rock City Falls, N. Y.

ROCK CITY FALLS, June 27, 1926.—A Frank Cottrell, Jr. of Massachusetts, has bought the old Hercules Paper Mill at this place and will operate it under the firm name of the Cottrell Paper Company, Inc.

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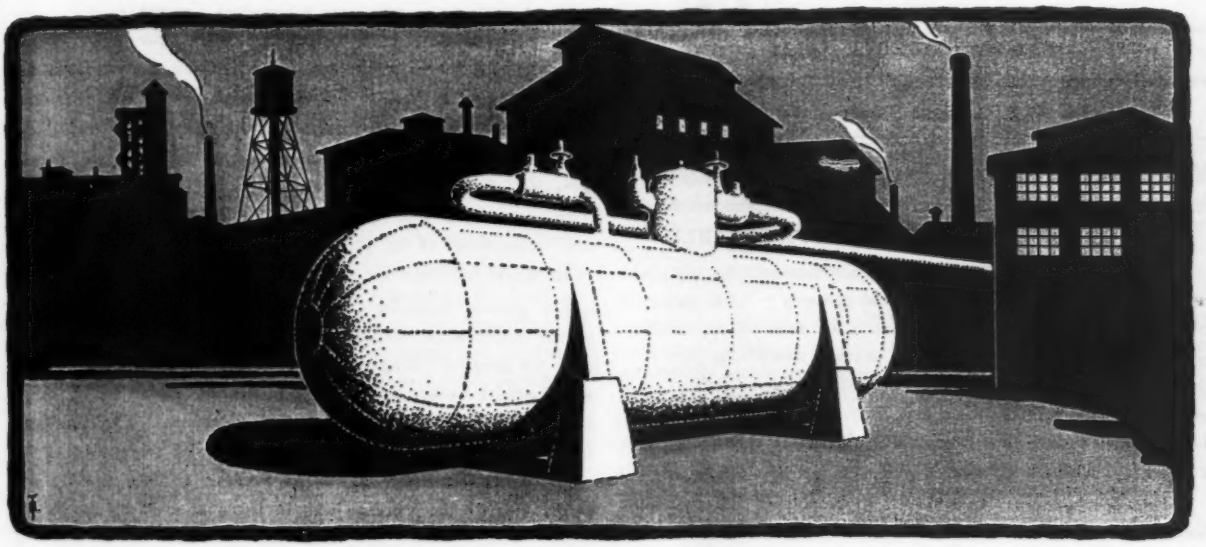

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HENRY J. BERGER, Editor

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Vol. LXXXIII New York, July 1, 1926 No. 1

RECORD OF PAST HALF YEAR FAVORABLE

As the end of June approaches, it becomes increasingly clear that the record of American trade and industry for the half-year will be found to compare favorably with that of any similar period in history, says a survey of business conditions just concluded by the Guarantee Trust Company of New York. In a number of important branches new high records have been established, and in nearly all a considerable degree of stability at high levels has been maintained.

Recent developments have served to emphasize the fact that the recession in business activity since the early part of the year has not only proceeded in an orderly manner, but that it has been distinctly moderate in degree. In most respects the current movement is comparable with that of the spring and summer of last year. Since 1923 these declines in activity, extending from early spring to late summer, have occurred with such regularity that they have come to be regarded as largely seasonal in character.

The usual indices of general business volumes show that both production and distribution have run considerably above the levels of a year ago. Railway freight car loadings in May were about 6 per cent. larger than in the corresponding period of 1925, although this comparison is somewhat biased in favor of this year by the fact that the observance of Memorial Day is reflected in the total for the first week of June. In spite of the holiday, loadings in the first two weeks of this month numbered 2,006,168, as against 1,977,683 in the fortnight ended June 13, 1925. The total for the year to date is 22,930,492 loadings, as compared with 22,343,670 in the corresponding period last year.

Bank debits to individual accounts in 140 centers outside of New York City for which weekly totals are reported by the Federal Reserve Board were about 2 per cent. smaller in the first two weeks of June than a year earlier. This decline was due entirely to a rather sharp drop in the total for the second week of this month—the first week so far this year which has failed to show a gain over the 1925 figures. The aggregate for the year to date is 7 per cent. larger than that of a year ago.

The increasing firmness of commodity prices, first apparent in April, developed into a definite upturn during May and has continued in recent weeks. The index of the Bureau of Labor Statistics stood at 151.7 last month, as against 151.1 in April. Professor Irving Fisher's weekly index rose from 150.2 at the beginning of May to 152.9 three weeks later, and then, after two moderate declines, advanced to 153.6, the highest figure since March, in the second week of this month. In the following week the index declined to 152.3, marking a slight gain from the May average.

The movement of prices suggests a degree of business confidence which, in its bearing on the immediate future, is decidedly encouraging. While it must be recognized that for some weeks seasonal influences will tend to produce further moderate curtailment in a number of important lines, the temper of the business community is by no means such as to warrant the expectation of any drastic or prolonged decline in general activity.

With inventories low, commodity stocks moderate and money easy there is none of the unsettling factors which usually precede a period of serious business depression in the present situation. The crop factor still remains indeterminate, but with a reasonable realization of its present promise it should be an added constructive influence for the expansion of fall business.

The general financial situation is encouraging. The position of the banks is not strikingly different from what it was a year ago, the greatest change in the statement of the member banks which report weekly to the Federal Reserve Board being the increase of $855,000,000 in loans and discounts. The significant feature of this item is that the greater part of the gain is in "all other" (mainly commercial) loans. A few months ago the preponderance of the increase was in loans secured by stocks and bonds. Time deposits have continued to mount, the present total being $416,000,000 above that of a year ago. Rediscounts and borrowings from the Federal Reserve banks are $75,000,000 less than at this time last year.

Money rates continue easy at a level roughly ¼ of one per cent above the average for June, 1925. Increased activity and higher prices on the Stock Exchange in recent weeks have resulted in some advances in the amount of loans to brokers and security dealers, but these have not been sufficient to affect in any marked degree even the course of call money rates, much less those which are not so directly responsive to the demand for loans on Stock Exchange collateral.

The average daily output of pig iron last month was 112,304 tons, which compares with 94,542 tons in May, 1925. For the first five months of the year the total was 16,613,152 tons, as against 16,338,491 tons for the corresponding period a year ago. Steel ingot production in May was at the rate of 151,744 tons a day, as compared with 132,883 tons a year earlier, and a comparison for the five months shows a total of 20,500,884 tons as against 19,178,620 tons in the corresponding period last year. The increase in steel output therefore amounted to 7 per cent., while the gain in production of pig iron was nearly 2 per cent.

Unfilled orders reported by the United States Steel Corporation continued to decline during May, indicating that shipments were still in excess of new buying. The volume of forward orders has run consistently below last year's totals since the beginning of the year, the figure for May 31 being 3,649,250 tons.

as against 4,049,800 tons a year ago. The decline during the month, however, was considerably smaller, amounting to only 218,726 tons, while that for May, 1925, was 396,768 tons.

The position of the industry has improved consistently for several weeks. The moderate curtailment of operations since the beginning of this month, together with a greater volume of buying, should result in a close correspondence between operations and demand. It is evident that at the present time steel buying is more active than a year ago.

NEW TRADE PRACTICE DIVISION OPPOSED

The creation of the new Division of Trade Practice Conferences by the Federal Trade Commission was opposed in a dissenting opinion of Chairman J. N. Nugent and Huston Thompson of the Commission.

The minority contended that in the interests of economy this new bureau should not have been set up, and that the older method of handling similar work, by trade practice submittals, was satisfactory.

The trade practice submittal has been in vogue since 1918 when it was put in force by Commissioners Murdock, Colver and Thompson, to be resorted to when unfair methods of competition had become so intolerable in an industry that a majority of those engaged in the industry desired the assistance of the commission in suppressing them, it was stated. When the commission decided to hold such a submittal invitations were addressed to all persons in the industry.

At the meeting it was sought to arrive at a decision of what constituted a fair and what an unfair practice in the industry. A member of the Commission was always designated to represent it. "All of the work with respect to said submittals," the dissent says, "was performed by the regular force of the commission and with but little expense. "Between November, 1918 and May, 1926, 20 trade practice submittals have been held, the majority of them being concluded in one day.

"In view of the number of trade practice submittals held since 1918, and the number pending, it is stated without hesitancy,," Commissioners Nugent and Thompson said, "that there was no necessity for the establishment of said division, and that the expense connected with its maintenance is not warranted. We are utterly unable to understand how the time of those connected with the new division can be employed in the public interest."

Paper Salesmen's Association Formed

Plans for the formation of a paper salesmen's association were perfected at a meeting of paper salesmen held at 85 Worth street, New York, last Friday. A. Price Dillont opened the meeting and introduced C. Frank Crawford, vice-president of the Employing Printers Association, who addressed the meeting. As Mr. Crawford is a well known and successful organization man, his talk was very helpful and instructive, and appealed strongly to those present, containing as it did some excellent advice.

The temporary organization was then formed, and A. P. Dillont was elected chairman, and Q. P. Emery, secretary. A committee was appointed, consisting of B. F. Brown and W. H. Feskitt who, with the chairman, will draft a constitution and by-laws. Upon this being completed another meeting will be held, of which due notice will be published, and at which the new organization will be completed.

H. L. Churchill Speaks on Reforestation

GLENS FALLS, N. Y., June 28, 1926.—H. L. Churchill, chief forester of Finch, Pruyn & Co., pulp and paper manufacturers of this city, gave an interesting talk on reforestation recently before the Glens Falls Kiwanis Club in the Queensbury Hotel. Mr. Churchill urged his audience to aid in the reforestation work. "Possibly some of you think that the forestry movement in the United States has been of slow growth," he said, "but for a land as broad and as richly endowed with natural resources as ours was and still is, it seems to me that general interest in our forests during the past few years has grown almost like Jack's famous beanstalk. I do not refer to the actual practice of scientific forestry but rather to the awakening of general public interest. Just now everyone is all excited over planting trees and it is a mighty good thing to do. It is especially important to get young people interested in this work because they will have to look after these forests later on and should grow up with the idea of tending a growing forest like any other crop and properly harvesting it when it is ripe.

"In the near future we are going to have besides Government, State and private forests all sorts of community forests. There will be county forests and town forests; city forests, water commission forests and all sorts of club forests. There are now many school and demonstration forests and all these will increase in size and number.

"The work of planting, protecting, improving, harvesting, manufacturing and distributing our forests and their products is tremendous. The United States cuts about one-half of the annual lumber cut of the world and 95 per cent is used at home. About ten million people are supported by the forests or their products. Wood is demanded by almost every American industry. But in spite of the fact that we are even yet cutting about three times as much as grows annually I am not at all pessimistic about the future. If our waste lands that can profitably grow timber are planted to valuable species and properly cared for and all our present timbered and wooded areas not suited for agriculture are protected from fire, disease and insect depredation and correct forest methods are employed in lumbering, for lumbering is an essential part of forestry and what can be done depends in a large measure upon what the public will buy, our forests will give an annual yield greater than our present consumption of about 25 billion cubic feet of wood. Many of our forests are in bad shape today, many areas are barren and unproductive, but we, the general public, are responsible for it and the splendid forests and other rich natural resources have made and are making this country what it is."

Superintendents Meet at Holyoke

HOLYOKE, Mass., June 27, 1926.—A joint meeting of the Northeastern and Connecticut Valley divisions of the Paper superintendent's association was held in the Hotel Nontouck Saturday night, covers being laid for 200 at the banquet that preceded the business meeting. Charles N. Mooney of Lee, chairman of the Connecticut Valley Division presided at the business meeting which was in charge of the Paper Makers Chemical company of Holyoke. Representatives of the company gave a demonstration of making resin size used in the making of paper. The talk that accompanied the demonstration was also illustrated.

Former Mayor John J. White of Holyoke was toastmaster at the banquet. The address of welcome was given by Charles N. Mooney while the speaker for the evening was George H. Carter, public printer of the United States Government. Mr. Carter in his address cited a lot of interesting figures of the government printing office and told of the large volume of work turned out daily. He dwelt at length upon the laboratory in which are made the standards and spoke of the various materials purchased and of the testing department established by him in 1923 where yearly 50,000,000 pounds of paper from news print to bonds and ledgers were tested upon purchase.

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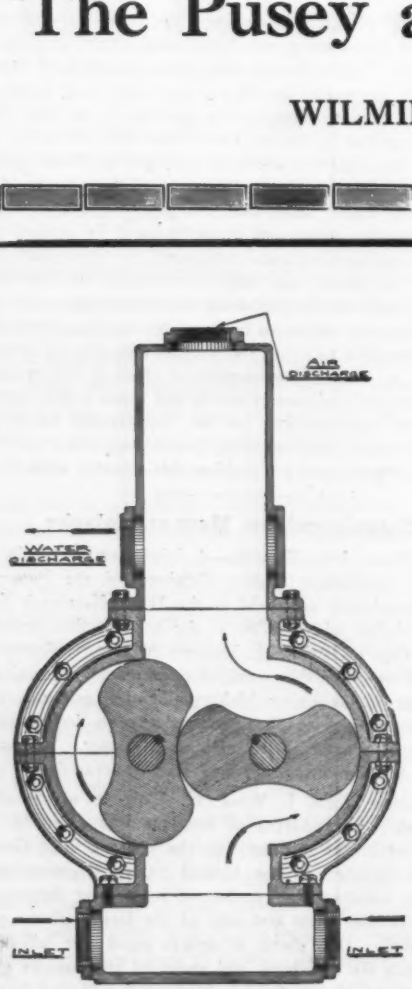

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X-Ray Investigations on Cellulose*

By R. O. Herzog[1]

In order that the organic chemist may be in a position to understand fully the interesting results obtained in recent years in the X-ray analysis of complex organic substances, it is necessary that he should not only be familiar with the phenomena of optical interference but also with the groundwork of geometrical crystallography.

Crystallographers have proved that the arrangement of the atoms in the crystal is controlled according to definite laws of symmetry, and that there exists only a limited number of crystal systems and of sub-classes of these.

From the chemical standpoint, there are, as shown by Reis, three principal factors that call for consideration in the case of the crystal configuration of any organic substance:

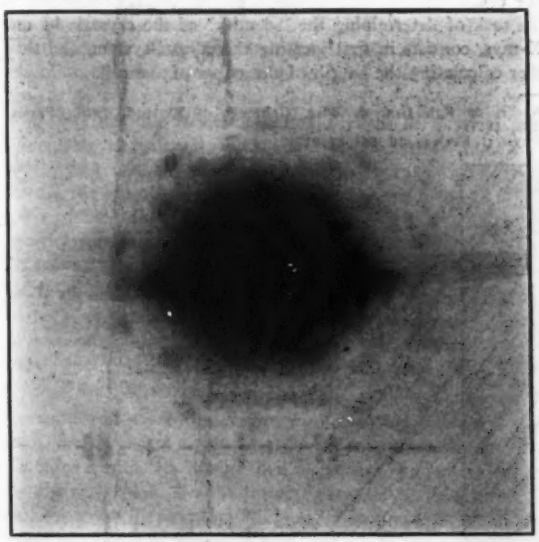

FIG. 1
Diagram of Hemp.

(1) The nature of the configuration of the organic radicles (homopolar).

(2) The nature of the ionized configuration, considered as a whole.

(3) The elements of which the radicle configuration is composed, together with the non-ionized organic substance.

With a knowledge of these, it is relatively easy for the chemist to visualize the effect of the mutual influence exerted by the atoms in the crystal.

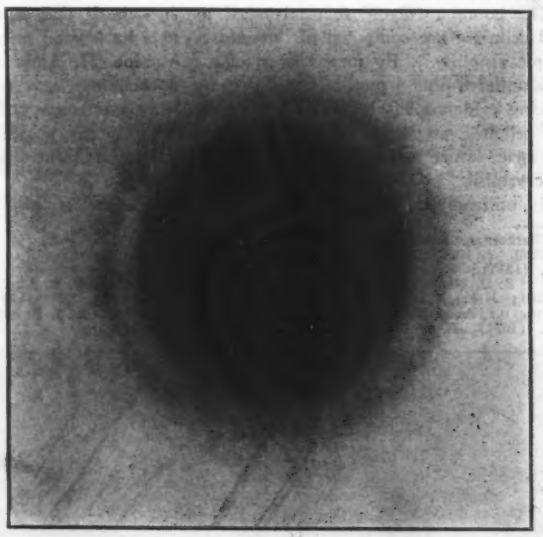

FIG. 2
Diagram of Viscose.

For example, if the crystal is composed entirely of the same kind of atoms, which may be recognized as spherical in shape, with a uniform distribution of the forces of attraction on each surface, then the simplest crystallographic arrangement would be that represented by the cubical system. It is for this reason that such a large number of elements are found to crystallize in this form.

In the case of organic substances, it may be assumed that, with groups of atoms, to which the chemist assigns a given individuality, namely the organic radicles, these also possess crystallographic properties in common, just as the molecule in the crystal retains its individuality. The form (spherical; plate; rod;) of the molecule, as well as the valence forces that originate on the surface of the molecule, are the factors that determine the form of the crystal.

The well-known discoveries of Pasteur, Vant Hoff, and Le Bel,—in a word, the discoveries of stereo-chemistry,—have proven this in

* Presented before the Dominion Convention of Chemists and the Canadian Technical Section, Montreal, May 31—June 3, 1926.

[1] Director of the Faserstoff Institute, Berlin.

the most decisive manner, and the X-ray investigations, together with their geometrical-crystallographic studies, have furnished further supporting evidence.

As is well-known, the smallest unit of the crystal that still possesses the geometrical properties identified with same, is termed by the crystallographer, the elementary parallelopiped, or cell.

From what has already been said, it follows that in such a cell of a homopolar organic substance (that is, with a non-dissociated product), either a single molecule must be present or a simple number of molecules.

The X-ray method of crystal-analysis provides us with the absolute dimensions of the cell-volumes. If this be denoted by V (expressed in 10^{-24} cm.^{3} units), then

$$V = n \times \frac{M}{s} \times N$$

Where M = the molecular weight; s = the specific gravity of the substance; $\frac{M}{s}$ = the molecular volume; N = the number of molecules per cubic centimeter (according to Avogadro, 61×10^{20}); and n = a whole number, which is dependent on the particular crystalline system under consideration.

Since V, s, and N are known, the value of nM can be calculated.

It is thus possible to determine the value of n, within certain limits, from the nature of the crystallographic system in question.

It has been found that the value of the product nM, in the case of fiber substances, is by no means so great as one had been previously led to believe, in the case of products of high molecular weight: for example, in the case of cellulose, the value of $nM = 4(C_6H_{10}O_5)$.

The botanist Nägeli[2] first advanced the hypothesis that starch and cellulose are composed of "minute crystals lie beyond microscopic visibility." By means of double refraction, H. Ambronn[3] substantiated this hypothesis with regard to cellulose, and convincing evidence has been obtained from X-ray spectroscopy that the cellulose particle, called by Nägali "micelle," really possesses the space-lattice arrangement of atoms or molecules characteristic of crystals.[4]

By utilizing the experimental laboratory procedure, as well as the industrial X-ray technique so conspicuously developed during the last few years, it has been possible to provide the desired experimental proof, and to show that these products exhibit the same X-ray interference phenomena as found with crystalline substances.

For instance, a closely packed bundle of parallel fibers of ramie or hemp, about the thickness of a match is irradiated by monochromatic -rays. Behind the bundle, vertical to the X-ray beam and parallel to the fibers, a photographic plate, wrapped in black paper is brought into position.

After an exposure of 50 to 100 milliampere-hours, the plate is sufficiently exposed, and on development gives an image as indicated in Fig. 1.

In the method described by Debye and Scherrer[5] as well as by Hull[6], this is accomplished by irradiating a crystal-powder instead of a single crystal. Since, in such a powder, the small crystals are in all possible kinds of positions, some of them are undoubtedly in the correct position. On the plate, a circle is marked around the point of penetration of the primary beam, from the radius of which θ and d may be determined. Further data cannot be obtained from such a photograph without auxiliary observations.

The following photograph (Fig. 2) shows such a ring-diagram of viscose silk.

The difference between this viscose diagram, Fig. 2, and that of the hemp, Fig. 1, is due to the fact that in the grown cellulose fiber, a lattice plans does not occur in every position, so that on the photographic plate the whole circle is not outlined, but only isolated points, as shown by Fig. 1. From the position of these interference points, the angle of the particular lattice-plane may be determined, and the fiber-axis, as well as the index with regard to the fiber-axis.

From the interplanar distances in the 3 dimensions, a parallelopiped may be constructed, which as is easily understood, represents the smallest body still possessing the symmetrical properties of the whole crystal; therefore, it is called the "elementary parallelopiped," or, more briefly, the "unit cell." The interplanar distances are also related in a simple manner to the "lengths of edges" of the cell.

The task of determining the "identity" of the crystals by means of X-rays, consists in first locating the crystal-system, and then in further calculating the length of the edges of the cell.

[2] Starkorner, 1858. Theorie der Garung, (1879).
[3] Koll. Z. 13. 200 (1913); 18. 90 273, (1916); 20, 173, (1917).
[4] R. O. Herzog u. W. Jancke, Z. f. Physik, 3, 196 (1920); B. B. 53, 2162 (1920); Herzog, Jancke u. M. Polanyi, Naturwiss, 9, 288, 337 (1921); Herzog u. Jancke, Z. f. agnew. Ch. 34, 385 (1921); Polanyi, Z. f. Physik 7 149. (1921). P. Scherrer u. Zsigmondy, Kolloidschemie (1920).
[5] Nachr. de Kgl. Ges. d. Wiss. Gottingen 1915, 1916, 1918. Physik. Z. 18, 291, 1917.
[6] Physical Review, 10 661, (1917).

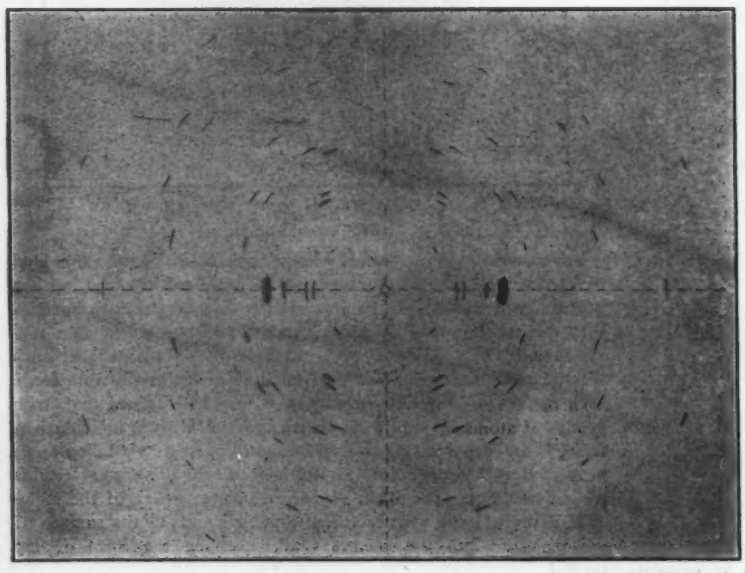

FIG. 3
Theoretical Cell Diagram.

FIG. 4
Mercerized Cellulose.

The data indicate that mature cellulose belongs to the rhombic system of crystal-symmetry, and the following values have been found for the length of the edges of the crystallographic cell:

$$a = 8.60 \times 10^{-8} \text{ cm.}$$
$$b = 7.78 \times 10^{-8} \text{ cm.}$$
$$c = 10.22 \times 10^{-8} \text{ cm.}$$

The quotation determining the positions of the points in the X-ray diagram is given by:

$$4\sin^2 \frac{\theta}{2} = 0.03210h^2 + 0.03923k^2 + 0.022751^2$$

The following table illustrates to what extent experiment and calculation agree.

TABLE I

Point	$\sin \frac{\theta}{2}$ Observed	$\sin \frac{\theta}{2}$ Calculated	Indices
A_1	0.01675	0.01783	110 ?
A_2	0.02105	.....	...
A_3	0.03210	0.03210	200
A_4	0.03923	0.03923	020
A_5	0.1600	0.1569	040 ?
		0.1605	330
I_1	0.01296	0.01371	101
I_2	0.08940	0.08772	311
I_3	0.11420	0.11714	321
II_1	0.03260	0.03255	012
II_2	0.06480	0.06466	212
II_3	0.0707	0.0700	122
II_4	0.1335	0.1342	322
II_5	0.1683	0.1610	412
III_1	0.06040	0.5921	103
III_2	0.06900	0.06902	113
III_3	0.08940	0.09840	023
III_4	0.1332	0.1332	313
III_5	0.1455	0.1395	133
IV_1	0.1102	0.1088	114
IV_2	0.1295	0.1302	024
IV_3	0.1710	0.1730	314

In this table, (A) indicates the points of the equator, (I) and (II) points on the first and second layer-line, and so on. The counting (indices) is accomplished by beginning from the vertical.

The same values, within the limit of experimental error, are obtained in the diagram of a number of fibers of several plants[1] (ramie, hemp, flax, broom, bast and morus alba, titaric, cotton, and others). The same result is obtained with cellulose prepared from the outside layer of the tunicates[2].

The agreement of the experimental and calculated values is very satisfactory. Only two points, A_3 and A_5, do not fit into the equation. It is uncertain whether they are to be accounted for by the presence of a second substance in the natural fiber, or whether they are due to other causes, perhaps of physical origin.

If the fiber is mercerized and the sodium hydrozide again removed by water, these two points fail to appear in the diagram of the mercerized cellulose, and other alterations also occur. The intensity of the points A_3 and A_4, the ratio of which is about 1 : 5 for grown cellulose, changes to about 3 : 3, and they move closer to the point of penetration. Also a new point appears quite close to the point of penetration.

Furthermore, some weak points disappear. Finally the layer lines move somewhat apart from the point of penetration. It seems probable that the crystals of the grown cellulose are under tension along the fiber axis.

Figures 3 and 4 are the diagrams of cellulose before and after mercerization, respectively. The alteration produced by mercerization in the ratio of the intensities of the points on the equator is distinctly seen. In the upper figure, the splitting off of the points observed in so-called "oblique protographs," especially in the case of "Genista tinctoria" and bast of Mirus alba after mechanical treatment[3], is evident.

Researches on infra-red absorption spectra of cellulose using fluorite-dispersion, made recently in conjunction with Fraulein G. Laski, render it unlikely that a change of chemical constitution takes place during mercerization.

The concentration in the direction of the fiber-axis is about

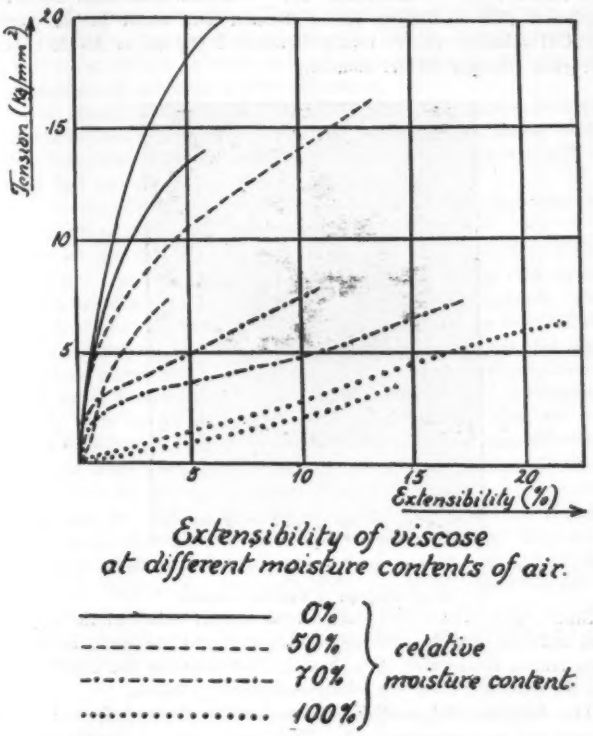

FIG. 5

Infra-red absorption spectra of nitrated cellulose, prepared from cotton previously mercerized.

three per cent, whereas the dimensions of the interplanar distances horizontally increase by about two per cent. Therefore, for mercerized or "hydrated" cellulose, a slightly modified equation is to be employed, namely:

$$4\sin^2 \frac{\theta}{2} = 0.003080h^2 + 0.003660k^2 + 0.024301^2$$

and for the lengths of edges as follows:

$$a = 8.88 \times 10^{-8} \text{ cm.}$$
$$b = 8.05 \times 10^{-8} \text{ cm.}$$
$$c = 9.88 \times 10^{-8} \text{ cm.}$$

TABLE II

Point	Stage of treatment	$\frac{\theta}{2}$	Intensity	Observed	±Error	Total mercerization Calculated
—	0	—	—	—	—	—
—	1	—	—	—	—	—
—	2	—	—	—	—	—
—B_3	3	6° 8.5′	w	0.01143	0.0004	
A_1	0	7° 26′	str.	0.01675	0.0003	
"	1	7° 26′	m.	0.01675	0.0003	
"	2	7° 19′	w.	0.01623	0.0003	
—	3	—	—	—	—	—
A_2	0	8° 20′	m.	0.02103	0.0003	
"	1	8° 20′	m.	0.02103	0.0003	
"	2	8° 28′	w.	0.02170	0.0003	
—	3	—	—	—	—	—
A_3	0	10° 19′	w.	0.03219	0.0003	
"	1	10° 19′	m.	0.03210	0.0003	
"	2	10° 14′	str.	0.03160	0.0004	
" = B_3	3	10° 6.5′	str.	0.03080	0.0004	0.03080
"A_4	0	11° 25.5′	v. str.	0.03923	0.0003	
"	1	11° 25.5′	str.	0.03923	0.0003	
"	2	11° 12′	str.	0.03760	0.0004	
" — B_4	3	11° 2′	str.	0.03660	0.0004	0.03660
II_1	0	10° 24′	str.	0.03260	0.0006	
"	1	10° 24′	str.	0.03260	0.0006	
"	2	10° 31′	m.	0.03330	0.0006	0.03345
III_3	0	17° 24′	str.	0.08940	0.0010	
"	1	17° 24′	m.	0.08940	0.0010	
"	2	17° 32′	w.	0.09080	0.0010	
"	3	17° 35′	v. w.	0.09120	0.0010	0.09127
IVd	0	17° 34′	v. str.	0.09100	0.0008	
"	1	17° 34′	v. str.	0.09100	0.0008	
"	2	18° 1′	m.	0.09580	0.0020	
"	3	18° 4′	w.	0.09620	0.0020	0.09780

Note: W-Weak; Str.-Strong; M-Medium; V-Very.

The table furnishes the necessary information as to the intensities and displacement of the most important points, these being indicated

[1] Naturwiss. 12, 955. (1924).
[2] Z. f. physiol. Ch. 141. 63, (1924), Herzog u. H. W. Gonell.
[3] H. W. Gonell. Z. f. Physik. 25., 118 (1924).

as follows: (0) = untreated; (1) = treated with weak NaOH solution (8% to 10%); (2) = treated with about 14 per cent NaOH solution; (3) = totally mercerized (by use of 28 per cent or even stronger NaOH solution).

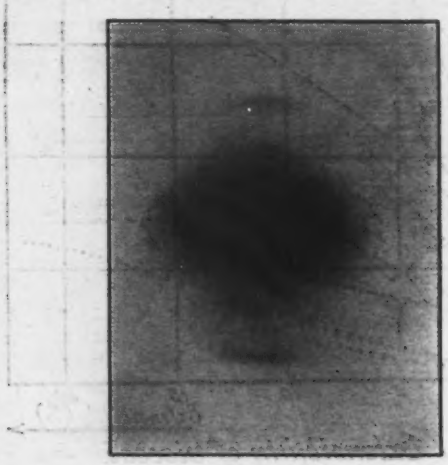

FIG. 6
X-ray Diagram of Cellulose Acetate.

Since, on continued treatment, all the weaker points of the original cellulose diagram gradually disappear, and the most intense ones remain measurable, only these few are available for establishing the quadratic form for totally mercerized cellulose.

The diagram of hydrated cellulose can be obtained from both viscose and cuprammonium silk. The former yields a ring-diagram (see Fig. 2), while the latter, especially when considerable tension has been applied during the precipitation of the threads, yields a more or less distinct point diagram[20].

Lichenin yields a diagram similar to that of hydrated cellulose, but not identical with it.[21]

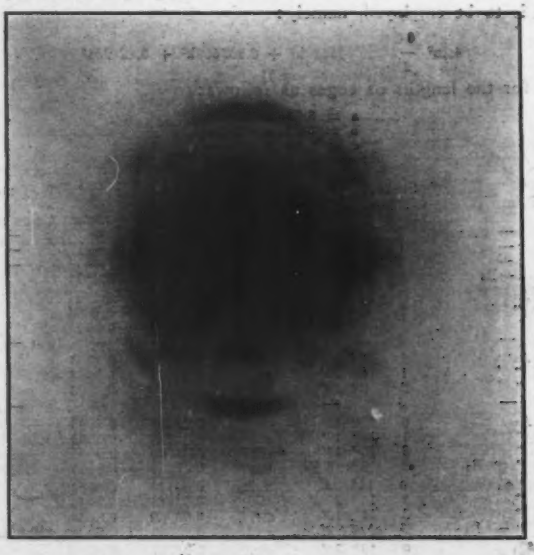

FIG. 8
Chitin, direct photograph.

From the equation,

$$V = \frac{n \times M}{N \times s},$$

where N = the absolute number of molecules in the gram molecule, and s = the specific gravity, the value of V can be deduced from the three lengths of the edges of the unit cell. The new value of s was determined by Dr. Krüger from a highly purified cotton, placed at our disposal by Professor H. Hibbert, and also from a hydrated cellulose:

FIG. 7
X-ray Diagram of Cellulose Nitrate.

Density of cotton cellulose = 1.602 ± 0.004; density of hydrated cellulose = 1.571 ± 0.004. The value of N is 61×10^{22}. The value of M is equal to the sum of the atomic weights; $(C_6H_{10}O_5) = 162$.

Number of C H O units in the Cellulose Crystal.

$$V = 8.60 \times 10^{-8} \times 7.78 \times 10^{-8} \times 10.22 \times 10^{-8} = 684 \times 10^{-24}$$

$$\frac{M}{N \times s} = \frac{162}{61 \times 10^{22} \times 1.60} = 166 \times 10^{-24}$$

from which the value of n = 4.12 is obtained.

There are, therefore, 4 $C_6H_{10}O_5$ groups in the elementary cell.

Number of C H O units in the Hydrated Cellulose Crystal.

$$V = 8.60 \times 10^{-8} \times 7.78 \times 10^{-8} \times 10.22 \times 10^{-8}$$

$$\frac{M}{N \times s} = \frac{162}{61 \times 10^{22} \times 1.57} = 166 \times 10^{-24}$$

from which the value, $4C_6H_{10}O_5$-groups is again obtained.

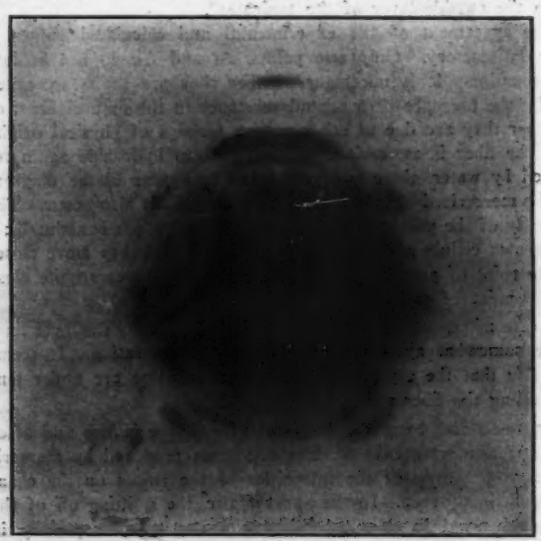

FIG. 9
Chitin, oblique photograph.

These results, while not excluding the chemical assumption, that all the glucose groups may be attached glucosidically to each other, yet renders it rather unlikely. It seems more probable that a number of groups, $n(C_6H_{10}O_5)$, (where, on account of the rhombic symmetry in question, n is 1, 2, or 4 only[22]), are linked together according to Werner's theory of secondary valencies, a theory

[20] Koll. Z. 35, 201 (1924).
[21] See Ott. Helvet. chim. Acta 9, 31. 1926; but Herzog Z. f. physik. Ch. 132, 119, 1926.

[22] Recently, Ott (Physik. Z. 1926) has developed a method of calculation if possible to deduce from the X-ray diagram the order of magnitude of the unit cell; he finds in sufficient approximation, n = 3.

maintained by Green [33], H. Hibbert [34], Hess [35], M. Bergann [36], and other investigators.

H. Ambronn has shown that cellulose nitrate, and Möhring that cellulose acetate are also probably cryptocrystalline, so long as they possess microscopic fiber structures, and this was also confirmed by X-ray analysis, whereas dissolved and reprecipitated material proved to be amorphous.

An X-ray analysis of such a cellulose acetate by Th. Nikl gave the following values:

TABLE III

Point	$\frac{\theta}{2}$	$\sin\frac{\theta}{2}$	Obs.	Cal.	$4\sin\frac{\theta}{2}$ Interference	Indices
A_1	6° 12′	0.1080	0.04684	0.04705	w.	010
A_2	9° 38′	0.1674	0.11204	0.11208	str.	200
A_3	12° 26′	0.2153	0.18544	0.18820	str.	020
I_1	6° 37′	0.1152	0.05312	0.05344	w.	101
I_2	8°50′	0.1524	0.09532	0.10049	mod. str.	111
I_3	12° 15′	0.2122	0.18012	0.18455	w.	211
II_1	11° 12′	0.1942	0.15092	0.14873	v. w.	021
II_2	14° 43′	0.2540	0.25816	0.26091	w.	212
II_0	9° 8′	0.1587	0.10080	0.10168	v. str.	002
III_0	14° 15′	0.2462	0.24236	0.25680	v. str.	103
IV_0	19° 14′	0.2394	0.43400	0.43474	mod. str.	104

From the equation,

$$4\sin^2\frac{\theta}{2} = 0.02802h^2 + 0.04705k^2 + 0.025421^2,$$

where $a = 9.20 \times 10^{-8}$cm.
$b = 7.10 \times 10^{-8}$cm.
$c = 9.76 \times 10^{-8}$cm.
$V = 631 \times 10^{-24}$cm^3.
$s = 1.20$
$M = 288(C_6H_7(C_2H_3O_2)_3O_2)$
$N = 6.1 \times 10^{23}$

$$n = \frac{V \times s \times N}{M} = \frac{631 \times 10^{-24} \times 1.20 \times 1.20 \times 6.1 \times 10^{23}}{288} = 15.9$$

from which it follows that $16C_6H_7(C_2)_3O_2$ groups are contained in the elementary cell.

The analysis of nitrated cellulose gave the following values:

TABLE IV

Point	$\frac{\theta}{2}$	$\sin\frac{\theta}{2}$	Obs.	Cal.	$4\sin\frac{\theta}{2}$ Interference	Indices
A_1	6° 46′	0.1178	0.05532	0.05535	v. str.	100
A_2	8° 46′	0.1524	0.09292	0.09292	str.	200
A_3	10° 20′	0.1794	0.12868	0.12840	str.	020
I_1	8° 5′	0.1406	0.07908	0.07568	v. w.	111
II_0	9° 5′	0.1593	0.10152	0.10447	mod. str.	102
III_0	12° 57′	0.2241	0.20088	0.20632	str.	103
IV_0	17°36′	0.3024	0.36572	0.36738	w.	014

$$4\sin^2\frac{\theta}{2} = 0.02325h^2 + 0.03210k^2 + 0.020331^2$$

$a = 10.10 \times 10^{-8}$cm.
$b = 8.56 \times 10^{-8}$cm.
$c = 9.77 \times 10^{-8}$cm.
$V = 845 \times 10^{-24}$cm^3.
$s = 1.58$
$N = 6.1 \times 10^{23}$

$$n = \frac{V \times s \times N}{M} = \frac{845 \times 10^{-24} \times 1.58 \times 6.1 \times 10^{23}}{252} = 32.1$$

from which it follows that $32C_6H_7(NO_3)_3O_2$ groups are contained in the elementary cell.

From a review of the experimental data, it is possible to state definitely that cellulose fibers are composed of crystals, and furthermore that these crystals are arranged in a rather definite geometrical order. Thus, in the case of ramie and hemp, we find a well developed point-diagram. The small crystals lie with one sharply defined axis in the fiber-axis, while the other two crystal axes may assume all kinds of positions. This result also agrees closely with microscopical observations on these two plants; namely, that the micellar rows lie in the direction of the fiber-axis. In cotton, corresponding to the cork screw-like structure of the fiber, the longitudinal axes of the crystals are distorted. The X-ray photograph shows, as is to be expected, circular arcs instead of points.

The results agree with the behavior of cellulose in the magnetic and electric field, according to the work of W. Jancke, who found that the fibers of cellulose are diamagnetic.

Small plates of parallel arranged fibers behave magnetically and dielectrically, like a positive crystal. For axially arranged crystals there exist definite relations between their orientation and optical, magnetic and electrical double diffraction.

The determination of the particular crystalline system and of the interplanar distances, is based on less decisive evidence, while the data relating to the number of C_6 groups in the unit cell is still less reliable.

However, the large number of accurate observations may be cited as an additional argument.

From the breadth of the interference lines and the X-ray diagram, it is possible to calculate the absolute size of the crystal grains according to Scherrer's formula for cubical crystals. The length of the edge of a cellulose crystal appears to be 100×10^{-8}cm.

Of the polysaccharides investigated by X-ray analysis, not only cellulose shows crystal structure, but also starch, mannan, inulin, and xylan (from straw). On the other hand, other polysaccharides, such as glycogen, mannan from the carob bean, do not yield interferences. In addition to cellulose, crystal fiber structure has also been proved in the case of silk fibroin; collagen; chitin; hair; muscle and nerve fibers.

It was for this reason that such an arrangement of crystals was given the generic name of "fibre-structure." The same orientation is also found in hard-drawn metal wires, and this fact, as well as certain teleological points of view, suggest a relation to the mechanical properties of fibers. Primarily, we are concerned with growing structures in which the direction of the crystallites is pre-determined.

[33] Soc. 81, 811 (1906).
[34] Ind. Eng. Chem. 13, 256 (1921).
[35] Ann. d. Ch. 435, 1 (1923).
[36] Ann. d. Ch. 445, 1 (1925).

American Writing Plans Reorganization

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 28, 1926.—Considerable interest was manifested here this week in announcement of reorganization plans of the American Writing Paper Company. The plan includes payment of $10 a share for each share of preferred for which there will be paid on each one hundred shares, $500 in first mortgage bonds voting-trust certificates for five shares of new preferred and voting-trust certificates for 60 share of new common.

Common will be assessed $5.00 a share, for which holders will receive for each 100 shares $250 in first mortgage bonds, voting-trust certificates for two and one-half shares of new preferred and voting-trust certificates for 25 shares of new common. Cash payment by preferred and common stock holders will total approximately $1,725,000.

Capital structure of the new company which will be formed will consist of $5,500,000 first mortgage six per cent bonds, due 1947, $1,000,000 four per cent serial notes due 1927-33 $9,000,000 preferred stock and 140,000 shares of no par common.

Holders of existing first mortgage 20 year gold bonds will receive $500 new first mortgage bonds and $680 new preferred. Secured debtors will receive for each $1,000 principal amount $500 cash, $500 in new serial notes and $150 in new preferred.

Unsecured debtors totalling $1,354,034, will receive for each $1,000 principal amount, $100 in cash and $900 in new preferred. Preferred stock holders will receive for each $1000 per value one share of new common.

Japan to Investigate Dumping of Wood Pulp

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 28, 1926.—The Japanese diet has approved an appropriation for the establishment of an anti-dumping investigation commission, according to cable advices to the Department of Commerce from Acting Attache Calder at Tokyo. The commission is empowered to deal with all matters concerning the prevention of dumping of foreign goods which compete with domestic industries. Soda, ash and pulp are mentioned as commodities on which the commission will institute investigations.

Beating*

By R. H. Clapperton and Wm. Henderson

Among all the various processes which are used in the manufacture of paper, none has aroused so much controversy and discussion as beating.

"What takes place in the beater?" is still a question that has not yet been answered to the satisfaction of the chemist, the engineer, and last, but not least, the papermaker.

We propose, however, as papermakers, to offer an explanation as the result of our experience, and aided by the results of the investigations of those who have of late years devoted so much time and careful thought to the subject.

At the outset we propose to divide the subject into two phases, free beating and wet beating.

By free beating we define those processes where such fibers as mechanical wood, esparto, straw, etc.—very short and poor in themselves—require no more than to be separated from clumps or clusters and are sent in almost, if not quite, their original form to the stuff chest.

The term "free" we regard as denoting the result of this elementary "beating." The fibers when passing over the wet end of the machine part with the water, in which they float, easily and freely.

The power required can be calculated, and special engines, such as the refining engine, can be used to achieve successful and satisfactory results.

The action of these special engines is not, in the true sense of the word, beating, although there is no doubt that some actual beating can, and does, take place when the fiber is of such a form and structure as can stand it. This class of beating suffices for newsprint, and other printing papers, and also for all those papers made from esparto with a *small* percentage of chemical wood. It is when we come to deal with papers of a better class, such as writings, banks, ledgers, cartridges and manilas, and in fact most papers that require to be watermarked, or to have strength, transparency or any other special feature, that the second phase of beating becomes of paramount importance, then in various degrees, the stuff must be what has been called by the older papermakers, "beaten wet." We by no means dismiss the first class of beating, namely, what we call free, as of no account or unworthy of investigation, but will confine ourselves to the second class, as being what is admitted by all concerned to be the representative process for all beating.

When the first prehistoric member of the Employers' Federation started to make paper, he found that one part of the process entailed a great deal of heavy work, and no doubt delegated the pounding or beating of the fibers to his sturdiest employe. Up to the present day to produce a strong paper from rags—we will assume this to be a representative of the whole class—the greatest power is consumed by the beating process. To reduce this great consumption of power, to beat the rags to produce what we require, with the minimum expense for fuel, is the ultimate object of all investigators of the process.

Wet Beater Stuff

Before we can do this we must find out what takes place in the beater. We can do this only by examining results and formulating a theory which will agree with these results. Now it is agreed that if two beaters furnished with identical quality stuff are run off, at the machine, and one is beaten wet and the other free, the one that is called wet beaten invariably produces the strongest paper. This brings us at once to the point where we must define what we mean by wet beaten stuff. In a word, it is stuff which parts with its water very slowly. It will go from the breast to the suction boxes without losing much of the water in which it is floating.

When passing over the suction boxes a high vacuum is required to withdraw sufficient water to allow it to be couched without being crushed. This is what a machineman will understand by "wet" stuff, and for practical purposes the word will express the idea to most paper mill men. However, for more scientific men, the word did not correctly define the condition, and they re-named it hydrated stuff, a word which really means combined with water in a chemical sense.

The question then arose as to whether this so-called combination of stuff and water is caused by the mechanical action of the beating engine, or by some obscure chemical process.

The theory of fibrage propounded by Dr. Silgurd Smith was hailed as a great discovery by the papermaking world. Without in any way wishing to detract from the value of this investigator's patient labors, we are of the opinion that he leaves us, for any real explanation of the subject, just where we were before. He has not shown us how to beat stuff wet or hydrated by using less power.

He does indeed indicate how power and time may be saved by using two plates, and causing one circulation of the stuff in the engine to give results hitherto obtained by two circulations, but the fact remains that the actual power that is necessary to beat remains the same. He gives us no explanation of beating which will enable us to get wet or hydrated stuff by any other means than the beating engine.

As for the chemical or physical question we should think that after the brilliant paper by James Strachan, no one will seriously say that any chemical combination of stuff and water can take place.

This being so, we venture to assert that the term hydrated stuff is misleading and erroneous. It has been presumed that stuff must be wet or hydrated before it is in that condition which makes the strongest paper.

Mr. Strachan's paper, in our opinion, conclusively proves that hydration is merely the sign that the stuff has attained that condition, and our personal experience in beating entirely coincides with his proof. He shows that when the fibers are subdivided into fibrillas and partly crushed into very fine particles, more water adheres to their surfaces or that the mixture of stuff and water has become more intimate; each minute particle of stuff has its superficial area increased by sub-division, and that additional surface area is covered by a film of water. Therefore, the fact that extra water has been attracted to the stuff is not the reason why the paper will be stronger, but because the fibers have been fibrillated, and this, we think, should be the proper word to describe the condition.

It can certainly never be asserted that water adds strength to fibers—though a distinguished paper mill chemist has stated that water shows a wetness or hydration of 5 degs. in the Schopper Riegler Tester—therefore it must be that they gain strength by being fibrillated.

Now let us describe what does actually take place in the beater from this standpoint. We will presume that we have got a Hollander furnished with linen canvas fibers. This stuff has been drastically boiled and gas bleached to remove all shine.

We may presume that in these processes the fibers have been thoroughly saturated with water. Indeed it is inconceivable that thorough saturation has not taken place. Every pore, canal and surface of each individual fiber has it full quota of water; yet it cannot be said to be hydrated in the true meaning of the word. We must leave it to expert chemists to say whether this is possible.

* Paper delivered before the British Technical Section at Manchester, Feb. 10, 1926.
* Worlds Paper Trade Review, Apr. 30, 1926.

To return to the beater. We know that if we simply clear the fibers of knots, etc., and run them over the wire, the sheet will look raw and cloudy, and the fibers will be too cumbrous to felt with each other, and will be easily pulled apart. The dandy roll will be unable to make a proper impression on the web. Therefore we have to beat the linen fibers—and "linen takes a lot of hammering" as every beaterman knows—in other words, we must have the fibers well fibrillated. If our beater bars and rolls are too sharp, we have great difficulty in fibillating the fibers; instead we may cut them and have free stuff, which is not at all what we set out to obtain. But if our tackle is dull, *i.e.*, the plate is well worn and the bars are blunt, we can put our roll down on the plate. Then, whether through fibrage on the bars, or the stuff being drawn through by the vacuum of the beater roll spaces, the process of fibrillation commences. As every beater bar passes the plate, so many fibers will be struck and bruised between the flattened surfaces of the bars and plate.

If a fiber is struck longitudinally, it may be divided into several fibrillæ; if across, it may still be fibrillated where the blow falls, thus exposing more surfaces to the water in the beater. But it is bound to be the case that many fibers will be so heavily struck that they will be partly fibrillated and partly bruised; the bruised portion will give up some of its particles to float in the general mass, other particles remaining attached to the fibrillae. If the beater is run long enough all the fibrillae will in time be crushed into these fine particles and become quite useless for papermaking. Therefore, our object is to stop the action when we have most fibrillæ and a good proportion of these particles amongst them. Our engine of stuff will be fully fibrillated. These fibrillae and many fibers partly flattened and some cut through with fibrillated ends, are obviously what will interlace to make a tenacious sheet, and the finer particles will settle into the minutest spaces between the larger fibers, and still further entwine them together.

Lose Bulk But Gain Weight

By this latter action we lose bulk, but gain strength and solidity —shown by hardness of rattle—and transparency. Now, in the making of our fibrillated stock into paper, our greatest difficulty lies in getting rid of the extra water carried by the stuff. Some is drained out by the sucking action of the tube rolls of the wire, some is drawn out by the suction boxes. The pressure of the couch and press rolls accounts for a great deal. But all the extra surfaces of the fibrillated fibers retain some surface water, and part with it only by evaporation on the hot drying cylinders.

It simply amounts to this, we have to dry a much greater surface area when the stock is highly fibrillated than when the stuff is free beaten.

Again, it is a matter of great difficulty to run heavy substances, say, 72 lb. Imperial, when using a rag stock highly fibrillated, to produce a strong paper. The maximum strength obtainable from the stock is limited to the capacity of the machine to extract this unwanted water on the wire, before the couch nip, *i.e.*, the stuff must in most cases be let down to the chest before it has been beaten long enough to get all the good out of its fibrillating capacity. To overcome this difficulty it is common mill practice to use steam heat in the stuff and water. This is said to dehydrate the stuff, but this dehydration does *not* reduce the strength of the paper. The increase of temperature reduces very greatly the surface tension of water, and it is this surface tension of water which is the cause of the trouble at the machines when making thick papers from highly fibrillated stock.

The finished sheet has its strength from the fibrillated condition of its mass, which is the essential factor, and *not* from the water, which has clung to the fibrillæ, and, being only incidental to the condition, has been removed.

This explanation of what happens in the beater is supported by papermaking practice and common sense, and it seems to us that in no way, except by the exercise of force, can we achieve this particular condition of stock.

Attempts have been made to reduce the time and power required for the fibrillation of stock, by producing a formation of mucilage or slime by means of acids or alkalis.

No success seems to have attended these experiments, which were, indeed, doomed to failure, because they were based on a false hypothesis, namely, that wet, greasy, or slimy stock must be productive of a strong paper.

A moment's thought would have shown that the reduction of a fibrous material to a starchy paste could not increase its strength. The condition aimed at in these experiments does, however, come nearer to that to which the true meaning of the word hydrated may be applied. But it is of interest to note that the wetness obtained gave no additional strength or quality to the paper, or, at the most, only what would have been got in greater degree by mixing a quantity of good starch with the fibers in the beater.

Some of Dr. Schwalbe's Tests

Some of Dr. Schwalbe's practical tests may be quoted to show how the formation of slime failed to improve the paper:—

"About 100 kilograms of softened soda cellulose were prepared in accordance with the author's process, patented in Germany, Patent No. 368,322, and this was used to make a dense paper. The softened stock was beaten in a beater, and after a short time a large amount of slimy matter was formed. This slimy mass was added to another beater in which a different grade of stock and slime was treated. A sample of the mixture of stock and slime was taken and was found to give a superior, dense paper. This result was not, however, obtained on the papermaking machine. What happened on the machine to destroy the effectiveness of the addition of the slimy material to the regular paper stuff was simply that the suction removed the slime from the paper. It went to waste in the back water.

"A second test was made on the principle that the paper stuff must be impregnated with the slime in order to secure good results, and it was concluded that such impregnation would take place to better advantage in a kollergang than in a beater. Accordingly, the softened fibrous matter was first ground up into a slimy mass with a little water in a kollergang; then the regular stock was added to the machine and thoroughly saturated with the slime. The material obtained from the kollergang after this treatment was rather slow stuff, but, here again the paper obtained from the papermaking machine did not show that it had been benefited in any way by the addition of the slimy material to the regular paper stock. The same thing took place, the suction drawing the slimy matter out of the fibrous mixture.

"The cellulose stock, which has been referred to, was treated in a beater provided with bronze knives, and it was then found that the beating time was considerably shortened. After the beating operation had lasted for an initial period of one hour, it was seen that the normal degree of hydration had been attained in both the cotton and linen stock. On the other hand it was also seen that the paper itself manufactured from this pulp was not improved in any way, but rather its quality was impaired in a certain sense."

These tests are admitted by Dr. Schwalbe to have failed to improve the paper in any way. There are, however, well known methods of improving the strength and hardness of paper by adding adhesive substances to the pulp in the beater.

These substances simply glue the fibers together at the presses and drying cylinders of the machine. None of these in general use at present, however, will give the increase in strength which may be obtained by skillful fibrillation.

We think that, instead of trying to fit mysterious explanations to what is, after all, a very simple mechanical process, chemists should turn their attention to the discovery and application of some substance or chemical compound, which, when mixed with ordinary cheap papermaking material, will give a paper with strength and qualities equal to those of a well fibrillated sheet made from cotton and linen fibres.

Fibrillation with its great consumption of power would then give place to the cheaper metod we call "free" beating, and our object would be attained.

Current Paper Trade Literature

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts of Literature of the Technical Association of the Paper Making Industry

By Clarence J. West, Chairman

Cellulose

Physico-Chemical Study of Cellulose Fibers. R. Boussu. Pulp & Paper 23, 1506-1507 (Dec. 24, 1925). The colloidal properties of cellulose and its chief derivatives (hydracellulose, hydrocellulose and oxycellulose) are briefly reviewed, and the phenomena of beating, sizing, and loading are explained in the light of these properties.—A. P.-C.

The Size of the Particles in Wood Pulp. D. Kruger. Papierfabr. 23, 767-768 (Nov. 29, 1925). The size and arrangement of the crystallities in cellulose depend on the natural conditions of the plant growth and on the manner of treatment of the raw material in industrial processes. From the ease of solubility of cellulose esters and the viscosities of their solutions, it is inferred that wood pulp is composed of smaller particles than cotton cellulose. The results of diffusion experiments of carefully nitrated cellulosic material showed that the size of the particles in sulphate pulp was 1.4×10^{-6} cm.; in sulphite pulp, 2.2 to 2.4×10^{-6} cm.; and in cotton, 3.4×10^{-6} cm. The larger particles of cotton account for the differences in properties of its esters, such as a lesser solubility and a greater viscosity. In the ripening of alkali cellulose for viscose, the increase in reactivity is traceable to a diminution of the particle size from 2.4 to 1.40×10^{-6} cm. It is suggested that a suitable test for evaluating the particle size and the ripening of viscose would consist in ascertaining the viscosity of the nitrate solution, prepared under standard conditions. The diameter of alpha cellulose particles is about 1×10^{-6} cm. The usual bleaching process for sulphite pulp reduces the size of the crystallite to two-thirds the original. When hemp pulp was beaten for 4 hrs. in a beater, the size of the particle was reduced one-half.—J. L. P.

Cellulose-Lignin

Evaluation of Sulphite Pulp. Th. Bentzen. Paper Trade J. 82, No. 8, 197-203 (Feb. 25, 1926) Paper Mill 49, No. 9, 116-124 (Feb. 27, 1926); Paper Ind. 7, 2003-2009 (March 1926). The technique of the determination of alpha-, beta-, and gamma-cellulose is minutely described. The residue obtained in the alpha-cellulose determination is shown to be unaffected by a second mercerizing treatment, but degraded slightly by heating 2 hours at 40° C. with water, and degraded considerably with almost complete destruction of fibrous structure by heating 6 hrs. at 70° C. with water containing a trace of bleaching powder and then drying. It is suggested that the difference in the durability of rag and sulphite papers may be due to the difference in their alpha-cellulose contents.—A. P.-C.

The Significance of the Alpha-Cellulose Test for the Pulp Industry. J. L. Parsons. Paper Trade J. 82, No. 8, 211-215 (Feb. 25, 1926); Paper Mill 49 No. 9, 126-130 (Feb. 27, 1926); Paper Ind. 7, 2019-2023 (March 1926). Discussion of the significance of the alpha-cellulose determination, the necessity for its investigation, and the agencies which are at present working on the problem. The author obtained very concordant results by Jentgen's method (*Kunststoffe* 1, 165, (1911) modified as follows: the pulp and alkali mixture is stirred intermittently during the 30 min. period; the pulp mass is filtered directly, with no previous addition of water on a 9 to 10 cm. Buchner suction filter, the fibers acting as their own filtering medium, the filtrate being again passed through the funnel to remove traces of fibers; the mercerizing container is rinsed and the mass given a preliminary washing with 100 cc. of 5 to 8% caustic soda solution; 40 cc. of hot 10% acetic acid solution is used; the alpha-cellulose is dried in a glass-stoppered weighing bottle at 105° C. to constant weight.—A. P.-C.

The "Copper Number" an Exponent of the Quality of Cellulose. M. L. Griffin. Paper Trade J. 82, No. 8, 150-151 (Feb. 25, 1926); Paper Mill 49,186,188 (Feb. 27, 1926). From a brief discussion of the nature and properties of cellulose, the author concluded that "the cellulose complex in its widest sense may be defined as comprising all the polysaccharide carbohydrates which form an essential portion of the structure of the plant and which yield cupric reducing sugars in hydrolysis by acids," and that "cellulose may be defined to be the resultant residue from a series of carefully regulated processes of attrition by methods of selective extraction, oxidation and hydrolysis, sufficient to effect the complete removal, in the mildest possible manner, of the other constitutional complexes, together with all adventitious and extractive matter." The determination of the "copper number" is considered to be the most definite measure for diagnosing the chemical condition of cellulose in numerical terms, yet available. The author describes and recommends Braidy's method, showing its advantages over the use of Fehling's solution. The method is as follows: immediately before using run 5 cc. of copper sulphate solution (100 g. $CuSO_4.5H_2O$ per 1.) into 95 cc. of alkaline solution (50 g. $NaHCO_3$ and 350 g. $Na_2CO_3.10H_2O$ per 1.) heat to boiling, pour on 2.5 g. of material to be tested in an erlenmeyer of slightly more than 100 cc. capacity, allow air bubbles to escape, close with a glass bulb, immerse in boiling water for 3 hrs., filter with suction, wash with dilute sodium carbonate and then with hot water, dissolve the cuprous oxide on the filter with alum (100 g. iron alum and 150 cc. concentrated H_2SO_4 per 1.), wash with dilute sulphuric acid, and titrate the filtrate and washings with O.O4*N* potassium permanganate, 1 cc. of which=0.00256 g. metallic copper.—A. P.-C.

The Solubility of Lignin in Phenols. A. Hillmer. Cellulosechemie, 6, 169-187 (Nov. 29, 1925). Lignin as such exists only in the plant and cannot be isolated unchanged by present methods. Each method for the "preparation of lignin" actually yields different lignin derivatives, which are referred to as primary lignin derivatives. Secondary lignin derivatives are formed from primary ones. The solubility of natural lignin or hydrochloric acid lignin in a large number of organic compounds, including phenols, substituted phenols, esters, amines, acids, etc., is reported in a qualitative manner. Phenols which contain at least 2 hydroxyl groups or a carboxyl group in any position, or a nitro, halogen, or aldehyde group in the meta or para positions to the hydroxyl group, dissolve lignin rapidly at a low temperature and without the presence of a catalyzer. Of the tri-substituted phenols, the asymmetric derivative is the most effective solvent. Catalysts assist greatly in the solution process. For this purpose chlorine and bromine are preferable reagents to strong acids. Under suitable conditions, compounds phenolic in character dissolve natural or hydrochloric acid lignins, unless the hydroxyl groups show the structure of ethers or esters, an amino group is present, or steric hindrance plays a role. Quantitative solubility tests of lignin in para-chlorophenol, with and without catalyzers were made. The amount of lignin which is dissolved depends on the temperature and time to a marked extent. The solution of cellulose is hindered by the addition of bases or iodine. The action of phenols on lignin involves a chemical combination in which probably a

carbonyl group of the lignin reacts with an enolic form of the phenol. The term phenol-lignin includes those condensation compounds and lignin derivatives which are formed in a phenol solution with natural lignin (primary phenol-lignin), and acid lignin (secondary phenol-lignin). From an acid lignin, having the composition $C_{31.6}H_{34.1}O_{9.4}(OCH_3)_4$, is prepared a secondary phenol-lignin of the composition $C_{31.5}H_{34.1}O_{9.4}(OCH_3)_3$. The latter substances are amorphous substances, soluble in several organic solvents.—J. L. P.

The Composition of Lignin. L. P. Zhereboff. Bumazhnaia Promyshlennost 3, 495-506 (Sept.), 686-709 (Dec. 1924); Paper Trade J. 81, No. 27, 47-58 (Dec. 31, 1925). A critical review of work published on the subject.—A. P.-C.

Raw Materials

Wood from the Ivory Coast. F. H. de Balsac, M. Cercelet, G. S. Dagand, *Bull. Agence Gen. Colonies*, 18,520 (1925); *Bull. Imp. Inst.* 23,482 (1925.) *"Avodire" wood* (*Turroeanthus africana*, F. Pelligrin) having ash 4.56%, fats and waxes 0.80%, cellulose 61.15%, lignone 32.49% (all on the dry basis), on digestion with caustic soda at a concentration of 5% for 8 hours under a pressure of 3 kilos, gave a light brownish-yellow pulp, which bleached easily yielding 37% of bleached pulp. On microscopical examination it was found to consist almost entirely of sylindrical fibers which tapered regularly and had a wide lumen and thin walls; a few cells and fragments of vessels were also present. The fibers varied in length from 1 to 2 mm. (with an average of 1.5 mm.), and in diameter from 0.015 to 0.025 mm. (with an average of 0.020 mm.), and had a felting power (diameter: length) of 0.015. The pulp furnishes paper which is comparable in every respect with that obtained from the ordinary wood pulps of commerce.—A. P.-C.

Manufacture of Pulp from Seaweed. A. J. de Montby and H. de Montby. Fr. pat. 595,394. The seaweed is macerated with constant agitation in the cold for 1 hour with 300 l. of water containing 1 k. of sulphuric acid and 250 g. of hydrochloric acid (sufficient for 300 kilos of seaweed,) allowed to drain, and cooked for 8 to 10 hours. at 3 to 4 k. pressure with 150 k. of solution containing 12 kilos of caustic soda and 1 k. of powdered bark of *Quillaya smegmadermos*. On removal from the digester, the liquor is removed from the fibrous material by means of pressure, and used for the recovery of iodine, bromine, gelose, etc., by a patented process. The residue is thoroughly washed, bleached with chlorine, and made into paper in the usual manner.—A. P.-C.

Cellulose Fibers from Banana Stems. E. Berkeley. Eng. pat. 238,659, Aug. 27, 1925. The banana stems, as separated or preferably previously crushed between rollers under pressure, are boiled for 3 to 4 hrs. with a half normal caustic alkaline solution, preferably under the disintegrating action of revolving blunt teeth distributed around the periphery of a containing drum which revolves during the operation which is conducted at atmospheric pressure. The alkaline liquor is withdrawn treated with calcium chloride (which precipitates the extracted coloring matter, rosins, etc.) causticized by boiling with caustic lime, and reused to treat a fresh quantity of stems. The potash salts extracted simultaneously in this process gradually accumulate in the liquor from which they can be extracted in the known manner when sufficiently concentrated. The alkali-treated fiber mass is washed free from slime and excess alkali by agitation with water, and then treated with a dilute solution of calcium hypochlorite. After 1 to 1.5 hr. the fibers are isolated as a pure white mass suitable after drying for use in paper making, as an absorbent for surgical purposes, or for the manufacture of artificial silk.—A. P.-C.

Transcaucasia. Anon. Papierfabr. 23, 826-828 (Dec. 21, 1925). Descriptive of the industrial opportunities and natural resources in Transcaucasia. As raw material for paper manufacture, corn straw, spruce, and fir trees (Picea orientalis and Abies Nordmanniana) which comprise about 6 per cent of the forested area, are available.—J. L. P.

Report of the Chemical Examination of Fiber from the Bark of Terap, Tutor and Baru. R. O. Bishop. Malayan Agr. J. 13, 382-386 (Dec. 1925). Analysis of the barks of terap (*Artocarpus Kunstleri*, King), tutor (*Hibiscus macrophyllus*, Roxb.) and baru (*Hibiscus floccosus*, Mast.) gave the following results on the dry basis (except H_2O which is on the wet basis):

	TERAP					
	Terap		Tutor		Baru	
Moisture	13.51	10.00	13.95	12.56	12.70	12.73
Ash	4.15	3.61	4.60	4.23	4.32	4.34
Water purification loss	6.82	7.00	8.54	5.27	4.35	4.35
Acid purification loss	9.09	9.35	7.03	5.92	6.81	7.08
Hydrolysis "A" loss	26.53	18.62	15.94	10.72	18.53	13.30
Hydrolysis "B" loss	31.12	31.10	30.01	21.20	26.68	23.10
Cellulose content	63.7	64.5	54.2	71.0	63.0	69.5
	mm.		mm.		mm.	
Fiber length—Max.	27		4.5		3.6	
Min.	9		1.8		2.5	
Av.	18.0		3.3		3.2	
Fiber diameter—Max.	0.0437		0.0285		0.0314	
Av.	0.0333		0.0257		0.0257	

Tutor and baru have smooth round fibers with well defined pointed extremities, regular in form, giving a yellow-grey color with iodine and sulphuric acid in glycerol, [illegible] a transient violet followed by a deep blue color when stained with iodine and zinc chloride. Terap fibers have generally sharp extremities, but occasionally blunt round ends; they are colored yellow by iodine and sulphuric acid in glycerol; with zinc chloride and iodine they give first a wine red which changes to deep blue. Fifty lbs. of air-dried bark were digested with water to a steam pressure of 65 lb. per sq. in. for 60 min., drained and washed with cold water, digested with 10 lbs. of soda in 40 gal. water at 65 lbs. pressure for 6 hrs., washed, beaten for 3 hrs., made into boards (20 by 10 in., weighing 0.25 lb.) on a hand mold, air-dried and calendered between steam heated rolls. Separate portions of the beaten pulp were used in small bleaching tests. The bleached pulp was not examined quantitatively. The color of the bleached pulp, relating to the consumption of chlorine, was good and it should be possible to produce a satisfactorily bleached paper from one of the three barks. The investigation shows that the tutor and baru barks are almost identical in chemical and microscopic characteristics and appear to be suitable for making a paper of good quality. Terap bark, though chemically similar to the tutor and baru, has a much longer ultimate fiber, comparable with that of hemp, and it appears that the terap bast after suitable treatment might be utilized for some of the same purposes as hemp.—A. P.-C.

Digesters

Device for Charging Digesters. A. Freak. Fr. pat. 597,223. The invention consists essentially in introducing the chips or straw into the digester under the action of one or more air currents, and at the same time drawing air out of the digester to prevent it from interfering with the fall of the material. By continuous circulation of the same air, no appreciable cooling of the digester occurs from this source. It is claimed that by charging in this manner approximately 15% more material can be introduced into the digester.—A. P.-C.

Freak Digester Filler. W. G. MacNaughton. Paper Trade J. 82, No. 5, 61 (Feb. 4, 1926). The equipment consists of a fan which circulates air with considerable velocity through the digester while it is being filled with chips. Between the force of the air current and the action of the conical distributor set in the end of the discharge pipe, the chips are apparently whirled into every part of the digester. The effect is also said to be that they are deposited on their sides, thereby taking less space. Tests at the Robertsfors mill (Sweden) showed an increase in yield from 78 to 108 k. of air dry (90%) pulp per cubic meter of digester space.—A. P.-C.

Pulp Digester Constructed to Provide Circulation of Cooking Acid When Directly Heated. Firma Koenigsberger Zellstoff Fabriken & Chemische Werke Koholyt. Ger. pat. 422,179. Wochbl. Papierfabr. 56, 1496-1497 (Dec. 5, 1925); Papierfabr. 24, 13 (Jan. 4, 1926). The pulp digester contains partitions so arranged to circulate the cooking liquor when steam is introduced.—J. L. P.

Sulphite Process

Recent Developments in the Construction of Acid Towers. R. Boehlig. Papierfabr. 24, 14-16 (Jan. 4, 1926). The construction of concrete towers (especially by the Boehlig system) is briefly discussed. The tile lining possesses especial acid resistance, durability and strength.—J. L. P.

Process for Manufacturing Sulphite Liquor by the Electrical Purification of the Burner Gas. Lurgi Apparatebau. Ger. pat. 422,620. Papierfabr. 24, 30 (Jan. 10, 1926). The process consists in removing dust, containing impurities, from the sulphur dioxide gases from pyrite burners by electrical means. Two such purifications are carried out.—J. L. P.

Electrical Gas Purification for the Pulp Industry. E. Zopf. Wochbl. Papierfabr. 56, 1540-1541 (Dec. 19, 1925); Papierfabr. 24, 28-43 (Jan. 17, 1926). Electrical purification of sulphur dioxide gas by the Cottrell-Moeller process is described. The removal of iron oxide dust, and the separation of arsenic and selenium from sulphur burner gases tends to prevent the formation of sulphur trioxide, which invariably leads to losses in pulp manufacture. The degree of purification may exceed 99%.—J. L. P.

Recovery of Gas from Waste Liquor. Anon. Zellstoff U. Papier 6, 33-35 (Jan. 1926). The removal and recovery of sulphur dioxide from waste gases from the sulphite pulp digester are described.—J. L. P.

Utilization of Waste Digester Gases from the Pulp Industry. Metalbank & Metallurgische Ges. Ger. pat. 423,198. Papierfabr. 24, 46 (Jan 17, 1926); Wochbl. Papierfabr. 57, 105 (Jan. 23, 1926). Waste digester gases are passed through an electric precipitating apparatus, such as the Cottrell-Moeller device, in such a manner that the organic and aromatic gaseous constituents, such as cymene and furfural, are freed and can be utilized.—J. L. P.

Lime Sludge Analysis. R. H. Stevens and A. J. Abrams. Paper Trade J. 82, No. 8, 243, (Feb. 25, 1926); Paper Ind. 7, 2001 (Mar. 1926) Filter 100 cc. of the well mixed slurry (or 10 g. of the filter cake diluted to 100 cc. with distilled water) on a buchner funnel, stir the residue with 100 cc. of distilled water for 5 min., filter, make the combined filtrates to 250 cc. (A) and dry the sludge (B) at 95 to 105° C. Determine total solids by drying 25 cc. of original slurry to constant weight. To determine free lime precipitate the iron and alumina in an aliquot of A, and determine total lime in the filtrate by precipitation as calcium oxalate and ignition to calcium oxide. This is sufficient for routine control work; but for specially accurate work stir 1 g. of B for 10 min. with 450 cc. of distilled water, filter, make up to 500 cc., and titrate an aliquot with 0.1 *N* hydrochloric acid to methyl orange end point, and add the amount of lime so found to the amount found in A. To determine total sodium oxide, titrate an aliquot of A with 0.1 *N* hydrochloric acid to methyl orange end point, calculate to sodium oxide, correct for the free lime previously found in A, and add the Na_2O present as sulphate, determined by precipitation in A with barium chloride, as usual. To determine calcium sulphate, boil 1 g. of B with dilute hydrochloric acid, filter off any insoluble material, and precipitate with barium chloride as usual.—A. P.-C.

Hydration of Lime. W. G. Whitman and G. H. Davis. Ind. Eng. Chem. 18, 118-120 (Feb. 1926). A study of the effect of various hydration methods on the properties of hydrated lime. The three most important variables are the ratio of water to lime, the temperature of hydration and the degree of agitation. The quality of the hydrated product was evaluated by testing its rate of reaction with acid and its rate of settling in water, and by microscopic examination. In general the relative rating of quality by any one of these methods checks closely with the ratings by the other two. The best product was prepared by hydrating quicklime with a large excess of water in boiling solution. Hydration with the theoretical quantity of water or with water vapor gave a coarse inferior hydrate. Excessively high temperatures, generated locally in the lime from the heat of reaction, are very detrimental because the lime approaches its dehydrating temperature while still only partially hydrated. Completion of the reaction is then very slow since the lime must lose heat before hydration can continue. During this time the particles have a chance to grow in size and the final product is very coarse. An elimination of conditions which produce these effects would undoubtedly result in an improvement in the quality of commercial hydrates.—A. P.-C.

Examination of Some Methods for Determination of Sulphite and of Ferrous Iron. W. D. Bonner and D. M. Yost. Ind. Eng. Chem. 18, 55-56 (Jan. 1926). The most satisfactory volumetric reagents for the determination of sulphurous acid or of sulphites are iodine solution, bromine solution and iodate solution. The iodine was checked with a gravimetric method, and the results were comparable. Iodate solution is preferred to bromine and to iodine, as it is more stable. Potassium permangante is quite unsuitable to use as a volumetric reagent for sulphites. Hypochlorite, dichromate and bromate solutions give better results than does permanganate. They are not sufficiently accurate for use in quantitative estimations, and this inaccuracy increases in the order named. Hypochlorous acid is a satisfactory oxidizing reagent for ferrous iron, and a method is given for its use in volumetric analysis. The tribromide method for ferrous iron does not give accurate results.—A. P.-C.

Chemistry of the Sulphite Process. IX. Influence of Hydrogen Ion Concentration. R. N. Miller, W. H. Swanson and Ragnar Soderquist. Paper Trade J. 82, No. 9, 58-61 (Mar. 4, 1926). Results of a large number of experimental cooks, details of which are given and discussed, lead to the following conclusions: (1) The view of the sulphite pulping process as an acid hydrolysis of wood is confirmed so far as concerns the removal of carbohydrate material. (2) The removal of lignin is the result of the specific action of ionized sulphurous acid (HSO_3^-). (3) The simultaneous removal of carbohydrate material and lignin are not mutually dependent, and the results obtained with sulphurous acid and bisulphites depend upon the, at least, dual reactive capacity of the sulphurous acid. (4) The removal of lignin by sulphurous acid and bisulphites is hindered by preliminary action of acid reagents, to an extent dependent on the severity of the acid treatment.—A. P.-C.

Chemistry of the Sulphite Process. X. Easy-Bleaching Pulp. W. H. Swanson and W. H. Monsson. Paper Trade J. 82, No. 9, 62-74 (Mar. 4, 1926). The experiments described show that in the cooking of spruce for easy-bleaching sulphite the temperature rise to any given maximum should be carried on at a rate sufficiently slow to insure maximum removal of the lignin at the lowest possible temperature consistent with the time available for the cooking. Bringing the temperature up through the cooking range, above 110° C., too rapidly, to compensate for a shorter cooking time, reduces the yield and strength of the pulp. A slower rate of temperature rise, although a longer time for completion of the cook is required, increases the yield and improves the quality of the pulp. Lowering the maximum temperature at which the cook is completed lengthens the time required but again increases the yield and improves the quality of the pulp. The reduction of pressure during the later stages of the cook, for recovering sulphur dioxide, serves to increase the yield of desirable pulp slightly, provided the pulp has reached a high degree of purification before the pressure is reduced. Pressure reduction at too early a point slows up the rate of cooking and produces a raw pulp. To effect purification under such treatment requires long cooking or cooking at high temperatures and decreases the yield by hydrolysis of the cellulose. Correctly cooked pulps do not suffer loss in strength when properly bleached. Over bleaching is detrimental to strength, particularly with pulp cooked with too rapid a temperature rise. The chemical loss in weight of pulp on bleaching depends on the bleachability alone; the harder the pulp bleaches, the greater will be the loss.—A. P.-C.

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A Discussion of Surplus with Reference to Surplus Available for Dividends*

By Henry T. Chamberlain

"Surplus" defined, is that portion of the net worth of a business which is the excess of the total assets over the outside liabilities and the outstanding capital stock. It is a common practice to divide by terminology the surplus of a business into two amounts, terming one amount "undivided profits" and the other "surplus" in order to convey the idea that the undivided profits may be distributed as dividends, and that the surplus will remain as permanent investment in the business. There appears to be little justification for this division by terminology, since the same purpose can be accomplished by calling the entire amount surplus, which would be quite accurate, and then earmarking it to show the amount available for dividends and the amount reserved for other purposes. In the interest of establishing a standard terminology, the use of the term "undivided profits" should be discontinued. The weight of authority is in favor of using surplus alone to represent the excess of the net worth over the outstanding capital stock.

Sources of Surplus

Many names have been applied to the different sources of surplus, such as "earned surplus," "paid-in surplus," "donated surplus," "capital surplus" and "unearned or unrealized surplus."

Earned Surplus

The most common source of surplus is the regular operating earnings of a business, this surplus being known as "earned", although seldom so designated in the accounts. All the earned surplus is available for dividends unless restricted by contract with creditors or by statute. An example of such restriction by statute is found in the national banking act which provides that every six months national banks shall set aside ten per centum of the earnings of the preceding six months, as a permanent addition to surplus, until the amount set aside reaches one-fifth of the par value of the capital stock.

Paid-in surplus, as the name implies, is surplus contributed by the stockholders, which is sometimes called "contributed surplus." A common example of paid-in surplus is the premium paid on original stock subscriptions. There are many reasons why surplus is paid in by the stockhoulders. The desirability of a certain class of stock may be the motive for paying a premium on that stock. In financial institutions where stockholders are subject to a double liability on the par value of their capital stock, it is common to find a large paid-in surplus. The reason is obvious: the desired capital is obtained and the double liability of the stockholders is lessened. To illustrate, if the desired capital was $100,000 the corporation would be organized with a capital stock of $50,000, which would be subscribed for at $100,000 and in case of dissolution, if the assets were insufficient to satisfy the outside creditors the stockholders would be liable for only $50,000.

The statutory law of the state governs the availability for dividends of paid in surplus. Just what the statutes mean is often difficult to determine, and related court decisions are few. The often-questioned moral right to pay dividend out of paid-in surplus when such is legally permissible can not be determined without taking into consideration existing conditions. Where premium on stock is paid under a contract with the corporation that the premium is not to be available for dividends, such premium should be credited to a surplus account designated to show such surplus as unavailable for dividends.

Capital Surplus

The term "capital surplus" is often used to designate surplus unavailable for dividends. (Let us ignore for the time surplus not available by reason of contract with creditors, which is segregated from ordinary surplus as appropriated for contract purposes.) However, the unavailability of capital surplus for dividends is seriously questioned by many accountants.

Surplus arising from the sale of capital or fixed assets is often credited by accountants to capital surplus. The availability of such surplus for the payment of dividends is unquestioned, yet many accountants are opposed to paying dividends from any funds other than the surplus arising from the regular operations of the business. It might not be wise to pay dividends out of surplus arising from the sale of fixed assets, particularly if the company intends to purchase similar assets at the prevailing market prices, but this does not affect the legal possibility of using such surplus for dividend purposes. Such a surplus sometimes arises because of excessive depreciation charges in the past. Where this conditiion obtains, there appears to be no reason for any distinction, as far as dividends are concerned, between capital surplus and surplus arising from the regular operations of the business. But whether or not the profit from the sales of a fixed asset is caused by excessive depreciation charges in the past, or is a reflection of an advance in the market price of an asset, the profit is a true one and is, therefore, available for dividends. In

* From Journal of Accountancy.

paying a dividend from such surplus it might be well to identify the dividend in order that the stockholders may recognize it as a dividend paid from profits other than those arising from regular operations.

On the foregoing basis, paid-in or donated surplus when not available for dividends may be considered as capital surplus.

Donated Surplus

A community will often make a gift of a tract of land to a corporation in order to induce the corporation to build in the town. Such gifts are usually conditional, depending upon the erection of a factory by the corporation and the employment of a specified number of men for a specified length of time. After the conditions have been fulfilled the surplus created by the gift is legally available for dividends.

Unearned Surplus

While the term "unearned surplus" is sometimes used, it is in inself confusing unless it is meant to designate a surplus not arising from operating earnings. A better term would be "unrealized surplus."

In a discussion of surplus it is necessary to consider appraisal valuations and their relation to surplus. It is quite a common practice, although erroneous, when the book values of assets are written up to conform to market values, to make the offsetting credit to the general surplus account. An unrealized increase in the values of assets is not surplus. The general surplus account should be an expression of realized values only. To credit the increase to unrealized surplus is correct, but the term is intrinsically unsatisfactory. To credit the increase in values to "surplus: appraisal valuation" is at once definite and clear.

Reserves—Operating and Non-operating

In a discussion of the special phases of surplus it is also necessary to consider the correlated subject of reserves. Reserves are classified as operating or profit-and-loss reserves, and non-operating or surplus reserves. Operating reserves, as the name implies, are reserves created by offsetting charges against operations. Non-operating reserves are created by offsetting charges against surplus. Both classes of reserves have one characteristic in common—they both represent accounts having credit balances. Operating reserves should represent actual liabilities that have been incurred, the amount of which is not certain, or an actual reduction in the value of an asset, the amount of which is only an estimate. A reserve should not be created for an amount that is certain. The creation of effective operating reserves demands capable judgment. If a reserve is created which is much larger than actually required, the operating profits will be reduced by the amount of the excess, which may work an injury to the stockholders. On the other hand the creation of inadequate reserves or the failure to create a reserve when one should be set up may result in an impairment of capital stock.

As unrealized appreciation in the value of assets has been mentioned previously, it is well to consider the reserve for depreciation on an asset whose value has been written up. When the value of an asset has been written up to conform to market values, and the periodical credits to the reserve for depreciation are based upon this value, the question then arises as to how the charge offsetting the credit to the reserve should be made. Should operations be charged with depreciation based on actual cost, or should the operating charge be based upon the appraised value? If operations are to be charged with depreciation based upon actual cost, an additional charge for the depreciation on the excess of appraisal value over cost value must be made to the account representing the unrealized increment; these two charges will offset the credit to the reserve for depreciation. If operations are to be charged and the reserve for depreciation credited with depreciation based upon the appraised values, another entry must be made charging the unrealized-increment account and crediting surplus for depreciation on the excess of appraised values over cost. It will be noted that the net result, as far as the total credit to surplus is concerned, is the same under both methods.

Accountants who are opposed to this second method argue that by charging depreciation on replacement values the cost is overstated. This is all very true if actual cost is meant, but actual cost is of minor importance as compared with current cost. Costs based upon values which prevailed fifteen years ago are not good costs. Some of the reasons for depreciating assets on replacement values are that the costs are then comparable with the cost of other concerns in the same industry which have purchased assets at current prices, and if the concern is one which bases its selling price on cost, current cost should be the basis.

Accountants have held for years, that dividends should not be paid from unrealized profits, but there is nothing wrong in paying a stock dividend from unrealized profits. By distributing the unrealized profit as a stock dividend the interests of the creditors are not affected unfavorably and the position of the concern is somewhat improved. If the unrealized increment is distributed as a stock dividend, the possibility that it may ever be distributed as a cash dividend is eliminated, and the operations of the concern will be put upon a more sound financial basis because depreciation charges will then be made with the prospect of eventual replacement of the asset at current prices. To illustrate, let us assume the following balance-sheet:

ASSETS		LIABILITIES	
Machinery	$100,000.00	Capital Stock	$100,000.00

The asset appearing in the balance-sheet is practically new, having been purchased at a forced sale. The remaining life of the asset is five years, and the current replacement price is $200,000. This concern depreciates its asset on actual cost, and all available earnings are distributed as dividends. At the end of five years, the balance-sheet is as follows:

ASSETS		LIABILITIES	
Cash	$100,000.00	Capital Stock	$100,000.00

Now it is necessary to replace the asset at the current price, with the following effect on the balance-sheet:

ASSETS		LIABILITIES	
Machinery	$200,000.00	Capital Stock	$100,000.00
		Notes Payable	$100,000.00
			$200,000.00

In this concern the working capital is a negative quantity. Now, suppose the firm had written up the value of its asset and had declared a stock dividend when it was known that a permanent increase in the value of the asset had taken place. The balance-sheet would have been as follows:

ASSETS		LIABILITIES	
Machinery	$200,000.00	Capital Stock	$200,000.00

At the end of five years the balance-sheet would have been:

ASSETS		LIABILITIES	
Cash	$200,000.00	Capital Stock	$200,000.00

It will be seen from this balance-sheet that there would be sufficient assets on hand to replace the machinery at the advanced price. Accountants should frown on the practice of writing up the values of assets, and on the declaration of stock dividends, unless it is felt that permanent increases in values have occurred.

Accountants who are opposed to depreciating assets on replacement values and distributing a stock dividend for the excess of replacement value over cost might contend that surplus legally available for cash dividends will be reduced by the amount of $100,000. But this should not be an objection to the method outlined if we recognize the distinction between legal availability and financial availability. As pointed out elsewhere in this paper, there are few, if any, concerns which could distribute their entire surplus and survive. Again, it may be argued that in a manufacturing concern an unrealized profit is present in the inventories of manufactured products due to the overstatement of actual cost. This objection can be met by the creation of a reserve for unrealized profit in inventories. It can not be denied that the procedure outlined is good financial practice, and it entails nothing unsound from an accounting standpoint.

Realized Appreciation

In speaking of appraisal valuations, there is another term which needs some consideration, namely, realized appreciation. It should be clearly understood that appreciation can not be realized unless the asset is sold. The term "realized appreciation" as ordinarily used, refers to the recovery of the excess of March 1, 1913 values over cost, by depreciation charges for income-tax computations.

A non-operating reserve is one created by an offsetting charge against surplus. Non-operating reserves may be created voluntarily or may be created in compliance with some statute or contract with creditors. The creation of non-operating reserves amounts to nothing more than earmarking the surplus. It should be remembered that a board of directors has the power to transfer the amounts in the reserves back into general surplus and to distribute the amounts as dividends, provided there is no contract or statute to the contrary. This power is often employed by boards of directors to establish regular dividends. In years when the profits are large, reserves are created out of surplus, thus apparently reducing the amount of surplus available for dividends. A reasonable dividend will then be paid out of the "available" surplus. In years when profits are lean or losses are incurred, the board of directors may transfer amounts from the non-operating reserves to general surplus and pay a dividend from these amounts, thus maintaining their dividend policy.

Reserves created by contract with creditors have been referred to previously in this paper. When a bond issue is floated the trust indenture usually provides for the payment to a trustee of an amount of money at stated periods, which, accumulated at compound interest at a given rate per centum, will be sufficient to liquidate the debt at its maturity. Such a fund is called a sinking fund. In addition to a sinking fund the trust indenture may also provide for a sinking-fund reserve, which is created by a charge against surplus and a credit to the sinking-fund reserve account. The sinking-fund reserve is usually built up at the same rate as the sinking fund. If the trust indenture provides for a sinking-fund reserve the board of directors is powerless to declare a dividend from such reserved surplus. The object of creating a sinking-fund reserve in addition to a sinking fund is to afford double protection to the bondholders.

It is frequently highly desirable from a business viewpoint to create non-operating reserves for contingencies, but a board of directors should not abuse its power to create such reserves merely to withhold dividends from the stockholders. Nor should a board of directors break faith with the creditors of a company by revoking non-operating reserves which were in existence at the time credit was extended, and upon which the creditors relied in extending credit.

Non-operating reserves should, however, be created by the board of directors whenever, in its opinion, such reserves are for the best interests of the company. Stockholders look longingly at a large surplus, hoping that it will be distributed as a dividend, but they often do not realize that a distribution of the entire amount might wreck the company. There are few, if any, corporations which could distribute their entire surplus and survive. The growth of a business demands the retention of some of the surplus in order to carry the inventories and accounts receivable at their maximum.

Let us now consider briefly the status of the surplus of a business which has outstanding preferred stock of no par value, subject to redemption at a higher price than that paid for the stock. For example, suppose a company is organized with an authorized capital of 4,000 shares of common stock having a par value of $100 a share, and 4,000 shares of participating preferred stock of no par value, subject to redemption at $100 a share. Further, assume that the total authorized issue is fully subscribed, the common stock being sold at par and the preferred stock of no par value being sold for $300,000. After operating for some time the company has accumulated a surplus of $200,000. Now the question is whether the entire $200,000 is available for dividends or whether $100,000 of the surplus should be credited to the preferred-stock account to bring it up to the redemption value. If the company were to liquidate, two entirely different results would be obtained, depending on the position taken as to the status of the $200,000 surplus. If it is held that the $200,000 is available for dividends the common stock would receive $100,000 and the preferred stock would receive $100,000 as a distribution of surplus; the preferred stockholders would then receive $400,000, the redemption price of their stock, and the common stockholders would get the balance, $300,000. In other words, the net worth of the business before dissolution was $900,000, and upon dissolution the preferred stockholders would receive $500,000 and the common stockholders $400,000. But if it is held that only $100,000 is available for dividends and that the other $100,000 should be reserved or credited to the preferred stock account, the division of the net worth $900,000, between the two classes of stock will be equal.

In the absence of court decisions on this point it appears that the second procedure outlined is the proper one. Prior to dissolution the surplus of $200,000 which is shown on the balance-sheet is legally available for dividends. If the entire surplus is distributed before dissolution the preferred stockholders would receive $100,000 and the common stockholders would receive $100,000. If the corporation were to dissolve after distributing the surplus of $200,000 the preferred stockholders would receive $400,000, and common stockholders would receive $300,000 in payment of the capital stock. In other words, if the entire surplus is distributed prior to dissolution the common stock must bear the difference between the redemption price and the price paid in on the preferred stock. But if the corporation were to dissolve before declaring the $200,000 surplus as a dividend a different distribution would result. When a corporation is dissolved a definite liability to the stockholders is incurred which in the present case would mean that both classes of stock must be paid in full if there are sufficient assets to pay them after providing for all outside liabilities, and any excess of assets would be divided equally among all the stockholders. In the case at hand the distribution of the net worth would be $400,000 to the stockholders of each class of stock in payment of the capital stock, and an additional $50,000 to the stockholders of each class of stock as a distribution of the excess assets.

A much clearer situation exists in the case of non-participating preferred stock of no par value. In liquidation the preferred stockholders would receive their stipulated dividend in addition to the redemption value of their stock. The balance of the net worth would then belong to the common stockholders.

Surplus in the Balance-sheet

Before finishing this discussion there is one more point which needs consideration—the presentation of surplus in the balance-sheet. The surplus should be shown in the net worth section of the balance-sheet. It should not be shown as a lump sum. Under the heading of surplus should appear the amounts reserved in compliance with statutory requirements or contractual obligations; the amounts voluntarily reserved for specific purposes, and the amount available for dividends. The total of these amounts should be added to the outstanding capital stock and the result, the net worth of the business, extended.

After all, a balance-sheet is nothing more than a picture of the financial condition of a business. The accountant is the photographer of this picture, and it is his duty to present clear, understandable print. The stockholders are most interested in the amount of surplus available for dividends, and the creditors in the amount of surplus reserved. The balance-sheet which does not show both of these items clearly has lost much of its value because it does not convey the desired information to either of the interested parties.

Failure To Make Full Cost Analysis Wastes Technical Efforts*

By Frederick M. Becket

For the last twenty years it has been my privilege to investigate and appraise the technical and commercial feasibility of processes directed to the manufacture of a wide variety of products. These processes have been presented as commercial possibilities by engineers or experimentalists in many fields and in various stages of development. The faker's case has no bearing on my thesis, and it is fortunate that perception rather than wide experience is required to detect his predatory projects, although it is pitiful that the ingenuity sometimes displayed should not have been exercised in a fruitful direction. The unfortunate cases are those of the honest and conscientious experimentalists who expend much mental effort in attempting and very often accomplishing goals, which they believe to be commercially attractive. Still sadder are the cases of the small group, sometimes including the capitalist, who, after successful experimental work organize a small company, erect a modest plant and develop the technology of the process, properly desiring to demonstrate at least in a semi-commercial way the feasibility of the whole scheme and believing that, at such stage the enterprise will more readily interest capital and return a large profit on the money previously expended.

Cause of the Wasted Effort

Now, it is deserving of special emphasis, that in a large proportion of the hopeless cases that have come to my attention, the great error, the cause of the waste effort, has been found, either in complete omission of any attempt to estimate the cost of manufacture, or more often, to predetermine it with reasonable accuracy. In all of these cases a revealing estimate could have been made by assuming theoretical yields from the chemical reactions and excellent results in connection with all other factors. The last thought is worthy of a little elaboration in that it provides a method of precluding these extremely wasteful procedures. By assuming theoretical yields from the chemical and electrochemical reactions, which are oftentimes interestingly clever, and by further taking the most optimistic view of all other factors that an experienced, reasonably intelligent engineer would dare to assume, it has been possible by cost estimating in this way to convince many, who have experimented diligently, that they have been seeking a worthless goal. The saddest instances revealed by this method are those in which mental energy and capital have been wasted to a much greater extent, in which the technology of a process has been carried to successful demonstration on a minor scale and for which great economy has been forecast in the operation of a plant of commercial size. In cases of the latter class cost estimates had been prepared by the proponents. Then wherein lies the difficulty? The most serious errors are those of complete omission of important cost factors, rather than the application of poor judgment to the factors considered, although frequently both errors are combined. * * * *

So many examples have come within my own experience, it is reasonable to assume that similar occurrences have been shared by many others—indeed, at least some confirmation of this has been gathered, from engineering friends—and therefore, I contend that in the aggregate a stupendous waste of technical effort still continues through the performance of experimental work to a substantially useless end, because reasonable accurate cost estimates are not being made to determine the economic accomplishment in the event of technical success. It is fully realized that no systematic work represents a complete loss, but there is little consolation in this thought, when one considers the contributions to industry, that might have resulted, had the same effort been applied more wisely. Especially does this seem true, when it is conceded, that much of the misspent work, to which I have alluded, was technically sound and ingenious.

Motives Usually Different

Less emphasis would be laid, if useless commercial experimentation had eventual value as research in pure science, a result seldom realized, because the motives are usually different. Research in pure science having been mentioned, may I digress slightly from my concrete topic to express approbation of this class of endeavor. Much of the research in pure science has been actuated by a desire for fundamental knowledge and progress of mankind without regard to financial reward. Love of service and the search for truth have been the impelling forces. Nevertheless there is increasing realization, that the search for basic principles has eventually returned the highest financial compensation. But whatever the motive, purely scientific research has given us an increasingly better world in which to live—physically without question, and spiritually let us hope. We surely sympathize with the urgent appeals, that have been made publicly of late, for a great expansion of the scale, upon which research in pure science is being pursued in this country. The latest I have noted, is the admirable address delivered last December by Secretary Hoover before the American Society of Mechanical Engineers, and it is my hope that American Electrochemical Society through the support of all the members will assume its full share in promoting pure science research.

The theme so far has been predominantly critical. My desire is not only to ask you to consider more carefully this particular type of wasteful effort, but to offer some constructive suggestions.

Lack of a Practical Guide

A fairly thorough search of the books and technical articles relating to industrial cost accounting and allied subjects has shown the lack of a practical guide adapted to cost estimation of this type. It is acknowledged that there are several excellent books on industrial cost accounting, but so far as I am aware these are all intended primarily to teach systematic methods of cost distribution and of determining total costs in established producing enterprises. Elaborate in details, these books serve the purposes of the cost accountant and the executive rather than the young engineer or experimentalist. Cost accounting has become a specialized business, particularly in our larger manufacturing concerns, but seldom does the practical operating man find opportunity to learn cost-keeping methods, especially those finally applied in the administrative department. Fortunate are the experimentalists, who have acquired the combined experience of practical production and cost accounting. Such men are exceptions and theirs is the duty to advance this cause. It was pleasing to learn very recently that there is in preparation a book by Tyler which will not only discuss the point already stressed, but will contribute prominently to chemical engineering through exposition of other economic aspects.

The following schedule portrays the general lines upon which a cost estimate may be drawn. From this, the novice can derive constructive suggestions, although some of the initiated may criticize it as obvious and therefore unnecessary. Nevertheless it is presented with confidence in its value, since my own ex-

* Extracts from presidential address before the American Electrochemical Society Chicago, April 23, 1926.

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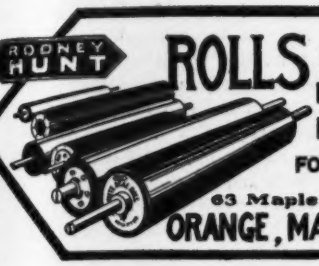

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perience has shown that the timely use of even this slight assistance toward approximate cost prediction would have saved a vast amount of work which is known to have been wasted in fore-doomed undertakings:

TYPICAL SCHEDULE FOR COST ESTIMATION CHEMICAL INDUSTRIES

Producing costs
- Basic Raw Materials Delivered
- Other Process Materials
- Power: Electrochemical and Mechanical
- Fuel
- Electrodes and Fittings
- Process Tools and Supplies
- Repair Materials: Equipment and Structures
- Packages
- Manufacturing Wages
- Repair Wages: Equipment and Structures
- Works, Salaries
- Works General Expense

Management and Marketing
- Salaries
- Rent
- Accounting
- Selling
- Legal Service
- General Expense

Capital Costs
- Amortization
- Depreciation
- Insurance
- Taxes

The principal object of such a schedule is to ensure that no important items of cost shall be forgotten. Naturally each class of process will call for modification of any typical schedule. A mechanical guide of this kind is of great assistance even to the experienced estimator.

Approximate Scale of Operation

Before attempting to predetermine costs it is a logical procedure to select an appropriate scale of operation and then to visualize the complete plant and organization required for the desired end. However clearly a process may have been conceived as a succession of chemical reactions and unit processes, cost estimating each material and operation develops a clearer picture of the producing and economic structures; and the mental courage, requisite to develop a thorough cost estimate, will find its reward in an enhanced understanding of the project. In every case the estimate deserves careful analysis. An estimate, which reflects favorably on the process, will show points of strength and of relative weakness, so that further work can be directed toward factors in which further economies should be sought or can most easily be secured. The autopsy on an unfortunate process will usually reveal the principal cause of failure and will at least dictate the need of a new line of attack. If the product is already being made by another method, an estimate of the corresponding cost may wisely be attempted, since, however ingenious a new process, its competitive utility will be slight, if the cost is relatively high. Clearly a cost estimate is the logical nucleus, around which to gather data for the complete engineering report, which the critical executive desires.

Intentional Omissions Explained

It is not my intention to discuss the details of cost estimation nor to proffer suggestions to the professional cost analyst or proficient engineer, and hence the fore-going schedule is not so branched and twigged as to resemble a chart showing the multitudinous derivatives of coal tar. Such elaboration would be irrelevent; furthermore, whatever value exists in the thoughts here presented, lies in the ease of their apprehension, which explains the intentional omission in the schedule of the current terms, "direct charges", "indirect charges", "burden" and several others.

To young experimentalists in industrial electrochemistry, to the many older workers who apparently have not yet awakened, I appeal for the adoption of the practice of predetermining costs; and I extend my appeal to the skilful members of this society not only to proclaim the principle, but to render more service through greater assistance to the inexperienced.

The extent of the conservation possible, by adoption of this practice, is indeterminable, but this does not deter me from expressing the opinion, that in this one direction the potential economy of human effort, alone represents an appreciable increase in our rate of progress in chemical industry. If financial terms will lend weight to my contention, I can say conservatively from my own knowledge, that several millions of dollars, in all probability many millions, have been wasted on experimental projects for the lack of timely cost estimation. This being the case of a single observer, what must the figures be in the aggregate? * * *

Briefly recapitulating, a vast amount of mental energy has been expended for industrial research and development toward goals devoid of economic profit. Many projects could properly have been rejected at their inception had cost estimates been made under assumed ideal conditions; others, on which experimentation was unwisely prolonged, could have been abandoned much earlier had reasonably accurate cost predictions been invoked. Therefore, looking toward accelerated progress as a plan of conservation, I appeal to young industrial experimentalists and to their guilty elders to adopt the practice of frequent cost estimation; and to the experienced members of this Society it is enough to mention these opportunities for augmenting their service by more frequent assistance to the uninitiated.

Miami Valley Superintendents Meet

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, June 29, 1926.—The Miami Valley branch of the American Pulp and Paper Mill Superintendents' Association held its regular meeting at the Engineers Club Saturday night where a splendid dinner was served to several score members and guests. The attendance was good, virtually all paper mill centers of the valley having been represented.

The speakers of the evening were Thomas H. Savery, Chicago, who heads his own company in paper mill supplies; and Harry E. Weston, of Syracuse, N. Y., formerly professor in the New York State College of Forestry, and who now is in the specialty business. Both men are widely known in the trade and their talks were greatly enjoyed.

Circulating as they do among the superintendents and mill men of the country, they were enabled to give considerable first-hand information and some valuable shop pointers.

Mr. Weston is another educator of note and the fact that he has taken up the selling game indicates his interest in the business.

Both men discussed the late improvements in paper mill machinery and modern methods.

Homer Ferguson of Hamilton acted as chairman of the meeting. R. L. Eminger, national secretary of the American Paper and Pulp Mill Superintendents' Association was unable to be present, having been called to Cincinnati.

The previous meeting was held at Community Hall, West Carrolltown, delivered one of the chief addresses. The West Carrolltown contingent furnished a real feast.

Interest in these regular gatherings has been well-maintained. Owing to the recent superintendents' meeting in Detroit, the Miami Valley Association skipped a meeting, or rather delayed the June session until late in the month.

Paper Mill Wages and Employment

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 28, 1926.—Reports were received by the Bureau of Labor Statistics, Department of Labor, from 205 paper and pulp factories, which reported their employment in March at 55,657, increasing in April to 55,920, an increase of 0.5 per cent. the payrolls in these plants, on the other hand, decreased from $1,500,743 in March to $1,494,043 in April, a decrease of 0.4 per cent.

The Bureau also received reports from 179 paper box establishments, who reported their employment in March at 19,348, decreasing in April to 19,071, a decrease of 1.4 per cent. The payrolls in these plants also decreased from $431,995 in March to $426,184, in April, a decrease of 1.3 per cent.

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W. J. Byrnes, Resolute, Hamburg, 2 cs.

METAL PAPER

Perry, Ryer & Co., Stuttgart, Bremen, 13 cs.

FLINTSTONE PAPER

United Hardware & Tool Co., Stuttgart, Bremen, 26 cs.

GARNET PAPER

United Hardware & Tool Co., Stuttgart, Bremen, 60 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., Minnekahda, London, 1 cs.
H. Reeve Angel & Co., Inc., Majestic, Southampton, 4 cs.

TRACING PAPER

Keuffel & Esser Co., Thuringia, Hamburg, 3 cs.
Kolesch & Co., Thuringia, Hamburg, 1 cs.
E. Dietzgen & Co., Thuringia, Hamburg, 21 cs.
E. Dietzgen & Co., Andania, Hamburg, 7 cs.

COVER PAPER

International Forwarding Co., Thuringia, Hamburg, 2 cs.
International Forwarding Co., Resolute, Hamburg, 7 cs.

BRISTOL BOARDS

Keuffel & Esser Co., Caronia, Liverpool, 10 cs.

PAPER TUBES

H. de Maguinn, France, Havre, 4 cs.

MISCELLANEOUS PAPER

F. Blanc & Co., Suffren, Havre, 3 cs.
C. H. Boulin, Suffren, Havre, 40 cs.
Japan Paper Co., Suffren, Havre, 5 cs.
Perry, Ryer & Co., Transylvania, Glasgow, 58 cs.
Japan Paper Co., Berengaria, Southampton, 3 cs.
F. L. Kramer & Co., Minnekahda, London, 1 cs.
Whiting & Patterson Co., Minnekahda, London, 2 cs.
W. H. S. Lloyd & Co., France, Havre, 1 cs.
A. L. Diament & Co., France, Havre, 3 cs.
Standard Products Corp., France, Havre, 34 cs.
Phoenix Shipping Co., Thuringia, Hamburg, 5 cs.
Kolesch & Co., Anaconda, Rotterdam, 5 cs.
Perkins, Goodwin & Co., Andania, Hamburg, 40 cs.

RAGS, BAGGINGS, ETC.

V. Galaup, Suffren, Havre, 94 bls. rags.
A. W. Fenton, Inc., Suffren, Havre, 45 bls. rags.
Corn Exchange Bank, Suffren, Havre, 24 bls. rags.
Robert Blank, Transylvania, Glasgow, 58 bls. rags.
Central National Bank, Transylvania, Glasgow, 60 bls. bagging.
Chase National Bank, Jufuku Maru, Genoa, 86 bls. jute waste.
Equitable Trust Co., Jufuku Maru, Genoa, 124 bls. bagging.
Royal Manfg. Co., Jufuku Maru, Genoa, 44 bls. bagging.
E. Butterworth & Co., Inc., Eastern Dawn, Antwerp, 98 bls. bagging.
D. M. Hicks, Eastern Dawn, Antwerp, 54 bls. rags.
Salomon Bros. & Co., Eastern Dawn, Antwerp, 47 bls. flax waste.
A. H. Searle, Inc., Caronia, Liverpool, 179 bls. rags.
A. W. Fenton, Inc., Caronia, Liverpool, 263 bls. rags.
A. W. Fenton, Inc., Galileo, Antwerp, 326 bls. rags.
B. D. Kaplan, Galileo, Antwerp, 8 bls. rags.
Chase National Bank, Stuttgart, Bremen, 158 bls. rags.
Central National Bank, Baltic, Liverpool, 45 bls. rags.
B. D. Kaplan, Baltic, Liverpool, 138 bls. rags.
Manufacturers Trust Co., United States, Copennagen, 400 bls. bagging.
Chatham & Phoenix National Bank, United States, Copenhagen, 440 bls. bagging.
Castle & Overton, Inc., United States, Copenhagen, 67 bls. rags.
Robert Blank, Hektor, Marseilles, 270 bls. rags.
Castle & Overton, Inc., Hektor, Marseilles, 43 bls. rags.
Castle & Overton, Inc., Hektor, Barcelona, 66 bls. bagging.
Chase National Bank, Galtymore, Belfast, 223 bls. rags.
M. Snedeker Corp., Galtymore, Belfast, 49 bls. rags.
Castle & Overton, Inc., Galtymore, Dundee, 70 bls. rags.
Maurice O Meara Co., Galtymore, Dundee, 24 bls. rags.
Chemical National Bank, Bremen, Bremen, 16 bls. rags.
Chase National Bank, Bremen, Bremen, 114 bls. rags.
Robert Blank, Bremen, Bremen, 112 bls. rags.
L. H. Abenheimer, Anaconda, Rotterdam, 130 bls. jute waste.
E. Mayer, Anaconda, Rotterdam, 49 bls. rags.
J. A. Brookman & Co., Anaconda, Rotterdam, 38 bls. rags.
Robert Blank, Anaconda, Rotterdam, 114 bls. rags.
Chase National Bank, Andania, Hamburg, 8832 bls. rags.
A. W. Fenton, Inc., Resolute, Hamburg, 505 bls. rags.
Fidelity Trust Co., Nubian, Manchester, 46 bls. rags.
T. D. Downing & Co., Nubian, Manchester, 61 bls. new cuttings.
E. Butterworth & Co., Inc., Nubian, Manchester, 110 bls. bagging.
E. J. Keller Co., Inc., Caucasier, Antwerp, 260 bls. rags.
Castle & Overton, Inc., Caucasier, Antwerp, 159 bls. rags.

OLD ROPE

Brown Bros. & Co., Exeter City, Bristol, 415 coils.
Brown Bros. & Co., Galileo, Hull, 59 coils.
E. J. Keller Co., Inc., Galileo, Hull, 97 coils.
W. Schall & Co., Hektor, Barcelona, 43 coils.
M. Maier Papermill Supply Co., Anaconda, Rotterdam, 24 coils.
Chase National Bank, Andania, Hamburg, 50 coils.

MANILA ROPE

Ellermans' Wilson Line, Minnekahda, London, 90 coils.

SUNN ROPE

DeGrauw, Aymar & Co., Belgenland, Antwerp, 30 coils.

WOOD PULP

Castle & Overton, Inc., Belgenland, Antwerp, 1448 bls. wood pulp.
Bulkley, Dunton & Co., Belgenland, Antwerp, 1000 bls. wood pulp.
Bulkley, Dunton & Co., S. Ventana, Bremen, 525 bls. wood pulp.
Bulkley, Dunton & Co., Drammensfjord, Sundsvall, 2000 bls. sulphate, 400 tons.
Bulkley, Dunton & Co., Drammensfjord, Sundsvall, 500 bls. sulphite, 100 tons.
Scandinavian Pulp Agency, Inc., Drammensfjord, Sundsvall, 3670 bls. sulphate, 734 tons.

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Imports of Paper and Paper Stock

(*Continued from page 68*)

Scandinavian Pulp Agency, Inc., Drammensfjord, Sundsvall, 2500 bls. sulphite, 500 tons.
M. Gottesman & Co., Inc., Drammensfjord, Sundsvall, 5375 bls. sulphite, 1025 tons.
Johanson, Wales & Sparre, Inc., Drammensfjord, Sundsvall, 6625 bls. sulphite, 1325 tons.
Bulkley, Dunton & Co., Drammensfjord, Sundsvall, 2750 bls. chemical pulp, 550 tons.
Bulkley, Dunton & Co., Drammensfjord, Gefle, 3625 bls. sulphite, 738 tons.
Fagel, Horton & Co., Inc., Drammensfjord, Gefle, 2750 bls. sulphite, 355 tons.
Fagel, Horton & Co., Inc., Drammensfjord, Gefle, 1500 bls. sulphate, 304 tons.
Bulkley, Dunton & Co., Stuttgart, Bremen, 2100 bls. wood pulp.
H. Hollesen, Inc., Stuttgart, Bremen, 3005 bls. sulphite, 605 tons.
Buck, Kiaer & Co., Inc., United States, Oslo, 1600 bls. kraft pulp.
French American Banking Corp., Anaconda, Rotterdam, 766 bls. wood pulp, 160 tons.
W. Hartman & Co., Andania, Hamburg, 630 bls. wood pulp, 96 tons.
Italian Bank, Andania, Hamburg, 538 bls. sulphite, 80 tons.
Italian Bank, Andania, Hamburg, 710 bls. wood pulp, 108 tons.
H. Hollesen, Inc., Andania, Hamburg, 525 bls. sulphite, 105 tons.
M. Gottesman & Co., Inc., Sulina, Stockholm, dam, 1350 bls. wood pulp.
Buck, Kiaer & Co., Inc., Bergensfjord, Hommelvik, 678 bls. sulphite.

WOOD PULP BOARDS

Lagerloef Trading Co., Schenectady, Hango, 100 bls.
Lagerloef Trading Co., Schenectady, Hango, 61 rolls.

WOOD FLOUR

The Hansa Co., Anaconda, Rotterdam, 400 bls., 20,300 kilos.

CASEIN

J. E. Bernard & Co., Minnekahda, London, 67 bags.
Kalbfleisch Corp., Western World, B. Aaires, 417 bags.
T. M. Duche & Sons, West Keene, B. Aires, 2502 bags, 150,120 kilos.

NORFOLK IMPORTS

WEEK ENDING JUNE 26, 1926

Johanson, Wales & Sparre, Inc., Schenectady, Hernosand, 6900 bls. sulphate, 1150 tons.
Johanson, Wales & Sparre, Inc., Schenectady, Hernosand, 1800 bls. sulphite, 300 tons.
Lagerloef Trading Co., Schenectady, Hango, 2148 bls. wood pulp boards, 338 tons.

BALTIMORE IMPORTS

WEEK ENDING JUNE 26, 1926

E. J. Keller Co., Inc., Bilderdyk, Karlsruhe, 530 bls. wood pulp.
Castle & Overton, Inc., Brudyk, Belgium, 187 bls. wood pulp.
M. Gottesman & Co., Inc., Wanja, Stockholm, 6350 bls. wood pulp.
M. Gottesman & Co., Inc., Casper, Stockholm, 6150 bls. wood pulp.
Buck, Kiaer & Co., Inc., Texas, Oslo, 850 bls. sulphite.
Bulkley, Dunton & Co., Ovre, ———, 2000 b's. wood pulp.
Bulkley, Dunton & Co., Riol, ———, 795 bls. wood pulp.
Bulkley, Dunton & Co., Sac City, ———, 752 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING JUNE 26, 1926

M. Gottesman & Co., Inc., Casper, Stockholm, 2750 bls. wood pulp.

NEW ORLEANS IMPORTS

WEEK ENDING JUNE 26, 1926

Castle & Overton, Inc., W. Hobomac, England, 413 bls. rags.
Castle & Overton, Inc., Ontario, France, 253 bls. rags.

PHILADELPHIA IMPORTS

WEEK ENDING JUNE 26, 1926

Phila. Paper Manig. Co., Exeter City, Bristol, 177 bls. waste paper.
D. I. Murphy, Eastern Dawn, Antwerp, 50 bls. rags.
M. Friedman & Co., Eastern Dawn, Antwerp, 86 bls. rags.
Brown Bros. & Co., Northwestern Miller, London, 194 coils old rope.
Girard National Bank, Northwestern Miller, London, 28 bls. rags.
National City Bank, Northwestern Miller, London, 43 bls. rags.
National City Bank, Northwestern Miller, London, 108 coils old rope.
Congoleum Nairn Co., Hektor, Marseilles, 280 bls. rags.
Brown Bros. & Co., Hektor, Marseilles, 213 bls. rags.
Baltimore Trust Co., Hektor, Marseilles, 101 bls. rags.
Union National Bank, Hektor, Barcelona, 50 bls. rags.
E. H. Bailey & Co., Galtymore, Dundee, 26 cs. paper.
E. H. Bailey & Co., Galtymore, Leith, 86 cs. paper.
Reis & Co., Anaconda, Rotterdam, 25 bls. thread waste.
Castle & Overton, Inc., Anaconda, Rotterdam, 480 bls. wood pulp, 77 tons.
Spaulding & Tewksbury, Anaconda, Rotterdam, 100 rolls straw board.
D. I. Murphy, Anaconda, Rotterdam, 74 bls. rags.
A. W. Fenton, Inc., Anaconda, Rotterdam, 193 bls. rags.
S. Spector & Co., Anaconda, Rotterdam, 110 bls. rags.
Castle & Overton, Inc., Anaconda, Rotterdam, 138 bls. rags.
Bulkley, Dunton & Co., Anaconda, Rotterdam, 225 bls. wood pulp, 46 tons.
J. P. Heffernan Paper Co., Anaconda, Rotterdam, 104 rolls straw board.
A. Price & Son, Anaconda, Rotterdam, 12 cs. wrapping paper.
B. L. Soberski, Anaconda, Rotterdam, 1600 bls. wood flour, 101 tons.
Robert Blank, Sachsenwald, Hamburg, 49 bls. rags.
Castle & Overton, Inc., Bellepline, Antwerp, 105 bls. rags.
Castle & Overton, Inc., ———, Antwerp, 187 bls. wood pulp.
M. Gottesman & Co., Inc., Sulina, Stockholm, 1500 bls. wood pulp.
Buck, Kiaer & Co., Inc., East Indian, Obbola, 4900 bls. kraft pulp.
Bulkley, Dunton & Co., Riol, ———, 390 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING JUNE 26, 1926

First National Bank of Boston, West Keene, Buenos Aires, 1584 bags casein, 95,040 kilos.
Brown Bros. & Co., Nubian, Liverpool, 96 coils old rope.
G. F. Malcolm, Nubian, Liverpool, 28 cs. tissue paper.
Payne & Stillman, Nubian, Liverpool, 8 bls. rags.
Brown Bros. & Co., Nubian, Liverpool, 68 bls. rags.
J. T. Lodge & Co., Nubian, Liverpool, 20 bls. rags.
J. T. Slack Corp., Nubian, Liverpool, 13 bls. rags.
Leigh Textile Corp., Nubian, Liverpool, 31 bls. cotton waste.
S. Silberman & Co., Nubian, Liverpool, 50 bls. rags.
American Express Co., Nubian, Liverpool, 35 bls. rags.
Leigh Textile Corp., Nubian, Manchester, 17 bls. cotton waste.
Ayres W. C. Jones, Nubian, Manchester, 23 bls. cotton waste.
T. D. Downing & Co., Nubian, Manchester, 151 bls. rags.
E. Butterworth & Co., Inc., Nubian, Manchester, 208 bags hide cuttings.
E. J. Keller Co., Inc., West Campgaw, Bremen, 46 bls. rags.
E. J. Keller Co., Inc., Nessian, Antwerp, 98 b's. rags.
H. Hollesen, Inc., West Campgaw, Hamburg, 270 bls. sulphite pulp, 54 tons.
Bulkley, Dunton & Co., Nessian, ———, 875 bls. wood pulp.
Bulkley, Dunton & Co., Sac City, ———, 130 bls. wood pulp.
Bulkley, Dunton & Co., Westerner, ———, 795 bls. wood pulp.

Paper Box Industry in Cleveland Prospers

CLEVELAND, Ohio, June 29, 1926.—The paper box industry of this district is prospering in a manner unprecedented for this season of the year. While gratified over the conditions, manufacturers are perplexed to understand the situation. As one of the larger paper box makers puts it, "business is upside down."

Last April when all plants should have been busy with the winding up of spring business, demand for boxes fell off and in May, which should ordinarily have been a fairly active month, sales managers were compelled to urge field men to maximum efforts to get business that plants might be kept running.

June, which with July and August normally make up the dull season, has been unusually active at the larger factories. Why those ordering paper boxes now didn't do so earlier is a mystery. Orders for Christmas packages are beginning to come in. This is particularly true of the Great Lakes Paper Box Company's two plants. The Lakeside Avenue factory is making boxes for distribution all over the country. The Superior Avenue plant's activities are confined principally to supplying Cleveland buyers and their demand is active now.

The printing paper business is spotty. Some of the larger plants did a good business in June this month being more active than May. This condition is largely due to the building strike which tied up the biggest office and business building campaign in the history of Cleveland.

Analyzation of general conditions indicates that buyers who have been holding off because of uncertain business conditions can assume this attitude no longer and have resumed buying from sheer necessity.

Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 30, 1926.—The Whitaker Paper Company has been awarded the contract for furnishing the Government Printing Office with 80,000 pounds (32,000 sheets) of No. 2 quality, 25 x 30", No. 20 binders board at $70.00 per ton, bids for which were received on June 4.

Barton, Duer & Koch will furnish 55,000 pounds (65,000 sheets) of various sizes No. 50 chip board at $33.94 per ton, bids for which were received June 9.

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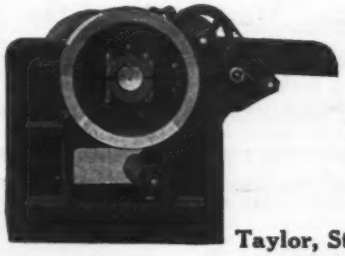

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New York Market Review

Office of THE PAPER TRADE JOURNAL,
Wednesday, June 30, 1926.

With the arrival of the holiday season, trading in the local paper markets is becoming much quieter. Demand for the various grades, however, is about as active as may be expected for the time of the year. Prices are being well maintained on most of the various grades of paper, while southern kraft is much firmer at present than for some time. The sales forces of the leading organizations are keeping fairly busy, although efforts will be generally relaxed while members of the various sales forces are enjoying well earned vacations.

News print is still in good request, and the increased output is being absorbed by the publishers right along. Spot offerings are very scarce, and prices are holding up very well. Shipments on contract are moving into consumption at an excellent pace, and the future outlook for the industry is very bright.

The various grades of paper board are in fairly good demand, and, while prices are somewhat easy, this situation is believed to be only temporary, according to close observers of the market. The fine paper market is moderately active, and prices are practically unchanged. The tone of the coarse paper market is sound, on the whole. Demand for wrapping paper has fallen off slightly, although conditions are about normal for the summer season.

Mechanical Pulp

Demand for both imported and domestic ground wood during the past week was mostly along routine lines. Due to increased grinding operations, supplies are becoming more plentiful. Prices are holding up to previously quoted levels. Domestic mechanical pulp is offered at from $30 to $33 a ton, f.o.b. mill and Canadian ground wood at from $28 to $31. Imported moist mechanical pulp is quoted at from $36 to $38 a ton, ex dock, and dry at from $37 to $40 a ton.

Chemical Pulp

The chemical pulp industry is still in a strong position, although the market is a little easier as regards to spot prices. Shipments of imported pulp are arriving freely, and paper and board mills are taking advantage of the present favorable situation. Contract withdrawals are being well maintained.

Old Rope and Bagging

Both domestic and imported old rope are in fair request. Offerings are ample at present and prices have declined slightly. Foreign Manila rope is now selling at from 4.50 to 4.75 and domestic old rope at from 5.25 to 5.50. Inquiries for bagging are only being received in moderate volume and quotations are easier.

Rags

No radical changes have been recorded in the rag market. The demand for domestic rags has improved slightly, however, and there is also a better feeling for foreign rags. All grades of roofing rags are in good request, and it is anticipated by competent authorities that this branch of the industry will continue active for some time to come.

Waste Paper

The supply of waste paper in the local market is still below normal, as the packers have been reducing their collecting operations materially. Strictly folded news has advanced to from .55 to .60 while No. 1 Mixed paper continues firm at from .50 to .55. Container board is now selling at from .60 to .65 and print at from .70 to .75.

Twine

Nothing new developed in the twine market during the week, and conditions are practically unchanged. With the usual decline for wrapping paper at this time of the year and the general slowing up of trade, not much activity is expected in this industry until the approach of autumn.

Paper Demand Rather Quiet in Boston

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 28, 1926.—There has been but little change in the local paper market for the last 10 days. Since the noticeable slump recently there has been little recovery and a return to brisker business is not looked for right away. The few orders that continue to flow through the various channels are of the hand-to-mouth variety, just enough to keep things going. This applies to mills as well as jobbers and retailers.

The first real touch of summer weather has given impetus to the beach and resort trade and the demand for tissues and wax papers, of course, is strong. There seems to be some hope for a bright fall business for the paper box men, who now are surveying the ground in that branch of the business. It is predicted that the clothing, textiles, candy and shoe centers will soon be on the upgrade, at least to the extent that some business will come in the direction of the paper trade.

The fine grade houses are doing fairly well but with school over and social events for June out of the way the demand for such goods has fallen off noticeably. It can be said, despite the present somewhat gloomy atmosphere, that the early and middle days of the month saw some good business for the fine paper houses. One merchant explained that the publishers and book houses were buying in small quantities but in most cases the merchants had to keep well stocked so that when a customer called for a certain line he could give it to him.

The raw stock division is quiet. Mills in certain parts of the state are down to a short week. Certain mills, it is reported, keep just enough stock on hand to get out the orders as they come in. Just the opposite to this, however, the writer found one firm doing business every day and running a midnight crew. This, it was explained in addition, was not on any special order, but a general thing. This same official said, "I cannot see any justification in this so-called dull time talk. We are busy, our mills are running full time and some of them up to midnight. We have no short weeks and we have no shut-downs. The business is there if you keep after it—summer or no summer."

Buys Machinery of Maryland Paper Mills

BENTLEY SPRINGS, Maryland, June 21, 1926.—Carl Lafean has purchased the machinery in the plant of the Maryland Paper Mills, at this place.

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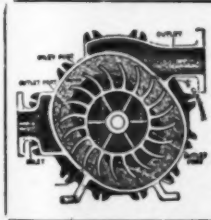
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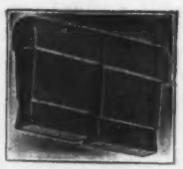
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NEENAH, WISCONSIN

GENERAL Aluminum Sulphate CHEMICAL
GENERAL CHEMICAL COMPANY 40 RECTOR STREET, NEW YORK

TABER PUMPS
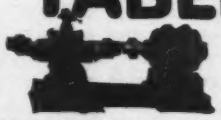
Fig. 510 illustrates Taber SL Double Suction Centrifugal Pump.
TABER PUMP COMPANY
BUFFALO, N. Y.

BELLE ALKALI COMPANY, Belle, W. Va.
PURE CHLORINE
In cylinders and tanks
BLEACH
BELLE BRAND
CAUSTIC SODA
76%—Solid and Flake
Arnold, Hoffman & Co. Inc., Sole Agents
PROVIDENCE BOSTON NEW YORK
PHILADELPHIA CHARLOTTE

Miscellaneous Markets

Office of THE PAPER TRADE JOURNAL,
Wednesday, June 30, 1926.

During the past week, trading in the local chemical market proceeded along routine lines. Contract shipments continued to move in good volume and withdrawals during the month of June have proved heavier than in the corresponding month of last year, according to all reports. Contract prices remain practically unchanged, and the schedule is being well maintained, in most instances. Spot supplies are said to be rather limited, but the prevailing demand is only light.

BLANC FIXE.—Steady conditions continue to prevail in the blanc fixe market and prices of both the pulp and the powder are very firm. The spot market is fairly active although consumers are apparently not stocking far in advance of actual requirements. The pulp is selling for $60 a ton, in bulk, and the powder is quoted at from 4¼ to 4½ cents a pound, in barrels, at works.

BLEACHING POWDER.—The bleaching powder market is in a sound position. Production is reported to have slowed down and accumulations are only limited. Contract shipments are moving into consumption at a regular pace. Bleaching powder continues to sell at from $2 to $2.40 per 100 pounds, in large drums, at works, according to quantity.

CAUSTIC SODA.—Contract withdrawals of caustic soda are proceeding along excellent lines and there has been little decrease so far in the volume moving into consumption. Some competition for desirable orders is developing and there have been reports of shading. Caustic soda is quoted at from $3.10 to $3.15 per 100 pounds, in large drums, at works. Spot car lots are quoted at from $3.20 to $3.25 per 100 pounds.

CASEIN.—Offerings of casein are still scarce and the price of the domestic product has again advanced slightly. A fair number of inquiries are in the market for future business and the demand is fairly persistent. Imported casein is quoted at from 18 to 20 cents a pound, while domestic casein is now selling at from 17¼ to 20 cents a pound, all in bags.

CHINA CLAY.—New business in the china clay market is mostly confined to small quantities. The movement of supplies against regular contracts is moderately active. Quotations remain unchanged. Prices on imported china clay range from $13 to $22 a ton, in bulk, ship side, while domestic washed clay is still selling at from $8 to $9 a ton, at mine, and pulverized at $10 a ton.

CHLORINE.—The chlorine market is practically unchanged. Production is said to be continuing at a normal rate and consumption is reported to be holding up very well. Supplies are moving into consumption in good volume. Chlorine is quoted at 4 cents a pound, in tanks, or multi-unit cars, at works, on contract orders, while the spot quotation remains at from 4½ to 4¾ cents a pound.

ROSIN.—Demand for rosin is irregular at present but the tone of the market is practically unchanged. Many observers are optimistic over the general outlook and look for a further upward trend in the market. At the naval stores, the grades of rosin used in the paper mills are being offered at from $13.70 to $13.95 per 280 pounds, ex dock, in barrels.

SALT CAKE.—Supplies of salt cake continue rather scarce, and as the prevailing demand is quite brisk, prices are much firmer. Shipments on contract are moving into consumption at a fairly normal pace. Salt cake continues to be quoted at from $18 to $20 a ton, in bulk, at works.

SODA ASH.—No slackening up has been experienced in the soda ash market and leading manufacturers are making contract shipments in large volume. Production is proceeding at a good scale, but very little surplus stock is accumulating. Contract quotations, in car lots, at works, per 100 pounds, are quoted as follows: in bulk, $1.25; in bags, $1.38; and in barrels, $1.63.

STARCH. Demand for starch is well up to seasonal average and prices have been steady for some time past. Stocks on hand are said to be amply sufficient to take care of current requirements. Special paper makers' starch continues to sell at $3.32 per 100 pounds, in bags, and at $3.40 per 100 pounds, in barrels.

SULPHATE OF ALUMINA.—Trading in the sulphate of alumina market was along rather quiet lines during the past week. The movement of shipments against contract, however, was fairly steady. Commercial grades of sulphate of alumina continue to sell at from $1.40 to $1.45, in bags, at works, in car lots, while the iron free is quoted at from $2 to $2.05 per 100 pounds, in bags, at works.

SULPHUR.—Business in the sulphur market is mostly proceeding along routine lines. Contract withdrawals are reported to be moving regularly and inquiries for future business are being received in fair volume. Sulphur is still quoted at from $18 to $19 a ton, in bulk, at mine, and at from $21 to $23 a ton, ship side.

TALC.—Demand for talc is fairly persistent for this season of the year. Prices are being well maintained and there is little evidence of shading. Domestic talc is still selling at from $15 to $18 a ton, at mine, and French talc at from $18 to $22 a ton, ship side.

CHAMPION FIBRE CO. PLANS

(*Continued from page 38*)

quently if fires are to be controlled, the system must rest mainly on prevention. The company has had excellent results but notwithstanding system and care some losses were sustained during the extreme drought of 1925 and the spring of 1926. The reforestation and fire protection work are under the direction of W. J. Damtoft, a forester of long experience with the Federal Government and widely known in the Appalachian region.

Work Recently Inspected

Desirous that its plans and methods might have the benefit of competent outside opinion the company recently had its holdings and reforestation work inspected by an officer of Hall, Kellogg & Co. The inspection covered a full week and as a result numerous suggestions were made and several extensions of plans were decided upon or taken under consideration.

The Champion Fibre Company is destined to occupy a prominent place among those timber industries of the South whose careers will not be terminated for want of timber.

Frederick Ritz Dead

NEWARK, Del., June 28, 1926.—Frederick Ritz for many years a leader in industrial life of Newark, and an esteemed citizen died at the Union Memorial Hospital in Baltimore, Md., on June 15 following an operation. Mr. Ritz was 68 years old.

He was born in Trenton, Ohio, and spent his early life in that state, where he grew up with the paper making industry and became superintendent of the American Writing Paper Company's mill for a number of years. He was also superintendent of the Eaton-Dikeman Paper Company's mill at Lee, Mass. In 1912 he removed to Newark and became the superintendent of the American Vulcanite Fibre Company's mill, now known as the National Vulcanized Fibre Company.

Mr. Ritz was well known to the paper industry, and was considered one of the most foremost authorities on fiber papers in this country.

He was a member of the American Pulp and Paper Mill Superintendents Association and was quite active in the work of the association.

He is survived by his widow and six children, three brothers and three sisters.

Penobscot Chemical Fibre Co. to Build

BOSTON, Mass., June 28, 1926.—The Penobscot Chemical Fibre Company of Great Works, Me., has placed a contract with the Morton C. Tuttle Company, 862 Park Square Building, for the reconstruction of the soda pulp mill drying room. This building is approximately 186 feet long and 56 feet wide. Work will start immediately.